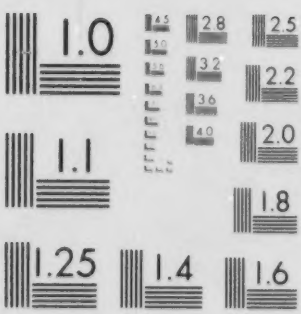

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ABSTRACT

This monograph describes the curriculum of the child development center of the Early Childhood-Special Education Teacher Preparation Program. The center provides a model preschool program in which teacher trainees work with children, ages 2-6, (several of whom have developmental deficiencies). The curriculum is designed to help teacher trainees organize the learning environment for an experience-centered curriculum, which allows children to explore knowledge in an interdisciplinary and multisensory way. Various aspects of the curriculum's theoretical rationale are discussed. Desired outcomes and growth sequences for the developmental areas covered by the curriculum (language, cognitive, motor, and social) are presented in detail, along with the procedures for assessing and measuring the child's growth in these areas, and the variety of strategies and materials available to the teacher for directing the child's development. (ED)

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Child Development Center
Curriculum: Child Program
for the Early Childhood
Special Education Teacher
Preparation Program

Marlis Mann Carol Anfin
Helen Musey
Monograph II

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PREFACE

The curriculum described here was designed as the child program for the teacher training program in early childhood education at the University of Virginia. A curriculum was designed that could feasibly be implemented with all young children approximately 0-7 years of age. Since these children are operating at various developmental stages with some having identifiable developmental deficiences, the curriculum must be such that it can be individualized and personalized for each child.

The curriculum was developed over a four year period and was fully operational during the fourth year. Constant revision is still part of the curriculum process as new information becomes available in the child development literature.

Several students and faculty assisted in providing suggestions for the development of this curriculum. Acknowledgement is given to Dr. Richard Abidin, Kay Albertson, Elaine Barker, Ginger Berman, Dr. Larry Bowen, Dr. Mitchell Bowman, Kathryn Castle, Dr. Delk Aubry, Pat Cormier, Beth Dyer, Dr. Barbara Flood, Dr. Edmund Henderson, Dr. James Kauffman, Lynne Mann, Dr. James Payne, and Anna Zapatoczny.

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Castle, K. Social development: individuation. Monograph XIV A Performance Based Early Childhood-Special Education Teacher Preparation Program: Final Report (086-0-71-4153(603)) 1971-74.

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Abidin, R.R. Parenting skills: a trainer's manual. Monograph III A Performance Based Early Childhood-Special Education Teacher Preparation Program: Final Report (086-0-71-4153 (603)) 1971-74.

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INTRODUCTION

The Child Development Center has been in operation since Fall 1972 and is located in the new School of Education Building at the University of Virginia, Charlottesville, Virginia. The Child Development Center provides a model preschool program for teacher training of Early Childhood and Early Childhood/Special Education students. It is also available for university students to observe children or interact with them for coursework. Interested people in the community may observe in the Child Development Center. Center personnel provide presentations of the program and materials to public and private school teachers. The Center is also a resource for students and faculty to conduct research.

The Center operates two and one-half-hour morning and afternoon sessions with a multiaged group of twelve children, ages two to six years, enrolled in each session. In both groups at least three children have been identified as having developmental deficiencies in either language, motor, social, or cognitive development. The remaining children are in the normal range of development. The children come from multiethnic backgrounds in the Charlottesville, Virginia area. A tuition charge is necessary as the Center operates at a cost basis and is self supporting.

The Child Development Center is directed by Dr. Marlis Mann. In the morning and afternoon sessions the staff includes head teacher and graduate assistant, both with masters degrees in Early Childhood as well as student teachers on the masters level.

A parent education program, discussed in this monograph, is provided for parents having children enrolled in the Center. The program consists of evening meetings dealing with child rearing practices for the parents to implement at home. In addition to this program, parents attend two meetings a year with the head teacher informing them about the Center's program and talking about any concerns. Parents also attend individual parent conferences throughout the year.

The following curriculum is designed to help learning facilitators organize the learning environment for an experience center curriculum. This content is described by concepts, generalizations, and/or principles of knowledge to allow the child to explore such knowledge in an interdisciplinary and multi-sensory way. Concepts come from (a) community needs, (b) child interest, and (c) societal needs (subject matter discipline). The growth of the child is viewed as a system of hierarchically integrated structures from every area of development. Developmental learning is a continually active process in which experience structures the areas of development. It refines perceptual motor skills and it organizes the mind of the child as he assimilates and accommodates new experiences.

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PHILOSOPHY

In developing a developmental curriculum for young children one must have a theoretical rationale upon which it shall be based.

Developmentalists begin with an orientation which focuses on sequential stages of human development. Their sources for identification of educational outcomes for young children are derived from empirically based learning theory and observed efidence of child development which includes contributions from many disciplines: physiology, anthropology, sociology, pediatrics, and psychology.

A developmentalist, then, is interested in changes in behavioral and physical dimensions as a function of age and/or stage. He is interested in describing how the child is behaving and how he is learning as well as the specific content of what he is learning. But while content is important, it often serves as the means for the process. In other words, it is not always more important for the child to learn about apples than artichokes; more important is the development and broadening of classification categories and skills that develop from the study of a concept. Therefore, in creating a curriculum it is the interaction process between child and environment developmentalists are primarily interested in.

If one subscribes to developmental psychology, one holds that how a child develops can be seen sequentially in the major areas of development and can be measured in terms of process and content. Children will fluctuate greatly in their development and a child below norm performance, by which developmental ontogenies are described, is not necessarily deviant. The advantage of knowledge of the developmental sequence is to be able to locate the operating level of the child and then environmentally broaden his skills of that level and assist him to the next level. The concern of the adult is not whether the child is behind or ahead of the norms, but rather where he is and how the child can be assisted to acquire new skills for which he is developmentally ready. However size discrepancies in the growth of abilities are unusual and should be further investigated. Children with wide discrepancies (6 months or more depending on chronological age) below norm of development are considered to be high risk children and it is in these situations that very direct strategies (directive process) should be implemented.

The majority of norm and near to norm children seem to benefit the most from a developmentally based interactive learning process (the developmental process). Yet all children can benefit from the diagnostic descriptors provided by developmental psychology which provides a means for determining developmental delays and therefore suggests teaching strategies that might be most effective. Since the interactive developmental learning process centers on child responses, it suggests an interactive process that supports child acting on the environment curriculum versus the environment acting on the child. Therefore it provides the base for a child centered environment.

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Learning Through Perceiving

This model is based on the major areas of development and uses concept development as its core. It assumes that perception is the basis of learning. Strauss (1947) in discussing methods of teaching brain injured children - defines perception as "the mental process which gives particular meaning and significance to a given sensation and therefore acts as a preliminary to thinking." It is through auditory and visual perception, sensory motor, taste, and smell experiences that the individual organizes and understands his/her environment. The sensory systems then become the modes for perception to develop the conceptual understandings of ones environment. The development of the child's perceptual capacities is essential to an understanding of the way in which the child establishes and maintains contacts with the world around him.

There are few if any carefully designed research studies that examine the best methods of training the preschool child to help bridge the gaps caused by unevenness in development. It has been the hypothesis of several authorities (Caldwell, 1956; Albetriccia, 1958; Francis-Williams, 1970; Lethinen, 1955; Graham, 1965) that it is the integration of the senses, particularly of language with the motor processes that enhance the child's perceptual hence cognitive development. This does not discount the extra practice of motor skills; however, it is the language added to the motor practice that assists the growth.

The basis then of this developmental curriculum is concept development. A concept is selected such as apples, sharing, family, etc. Then the classification and relational concepts related to the major concept are identified. The major areas of conceptual development are as follows: (a) properties - What is it like?; (b) positional - Where is it?; (c) opposites - differences - How is it different?; (d) quantification - How much is it?; (e) comparisons - How different is it?; (f) associations - related ideas; (g) time; and (h) motion - How does it move? Appropriate classification concepts are selected to be emphasized. The teacher prepares a physical environment that elaborates the vocabulary he/she selects.

We apply levels of development in the areas of social, motor, visual perceptual, cognitive, and language.

The curriculum model described in this monograph is considered to be a multi-sensory learning system in that experiences of the areas of development are related to the concept being taught (language, cognitive, and social, perceptual, physical, perceptual motor). It is a compilation of open ended, yet structured, resource materials and experiences around a specific concept. Media include organic objects, artifacts, children's literature, movies, films, filmstrips, slides, tapes, music, sound objects, art reproductions, sculpture, toys, art media for creating purposes, and any other object which reinforces the learning of the concepts.

The teacher serves as a facilitator who raises open and closed questions and gives informative feedback to the child's verbalizations. A teacher is providing a developmental curriculum if he/she prepares an environment and experiences that provide J. McVicker Hunt's developmental match so children are always developing and refining language, cognitive, motor perceptual skills. This can be done if the learning facilitator knows the developmental levels of the children which infers developmental diagnostic skills and then be able to implement an environment based on the knowledge gleaned from the diagnostic tests.

This curriculum model is the basis of planning such a developmen-

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tal curriculum. The system spirals in a developmental nature in that every child interacting with the media can gain further knowledge of the concept intended by building fine discriminating classification systems. Outcomes should be set for each child so the child will be stimulated and motivated to learn. However, since no two children experience the primary data in the same way, one can not always predict the learning that will occur from a prepared environment.

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Play: The Perceptual Process

The child centered philosophy is based on primarily the developmental studies of Piaget supports the notion of Lawrence Frank that "play is how a child learns what no one else can teach him" (1963).

Jean Piaget, the leading theorist in the area of cognitive development in children, defines cognition as a harmonious combination of imitation (a continuation of accomodation-continually bringing thought into an existing pattery) and play (a continuation of assimilation or thought polarized by a pre-occupation with individual satisfaction). According to Piaget (1969) play transforms reality by assimilation to the needs of the self, whereas imitation is accomodation to external models. He defines play as "the primitive intellectual investigations of the child and as the assimilation of reality to the ego" (Piaget, 1962). Elkind (1969) suggests that intelligence is concerned precisely with the creation of balance between assimilative and accomodative processes.

Several persons have researched children's play and/or literature in terms of early investigation of childhood play (Lunzer, 1959; Lovell et al., 1968; Markey, 1935; Sutton-Smith, 1971; Hurlock, 1964; Parten, 1932; and Piaget, 1969, 1962, 1965). These studies suggest that there are stages of play that occur gradually and that shifts in symbolic play particularly are overlapping in development rather than delineated.

From Piaget's studies some basic understandings of children's play can be proposed. The first is that strudtured play is inadequate for preschool children. Unstructured play gives children the opportunity to assimilate what they know by providing impetus to accomodation of thought. Children use their perceptions to guide their behavior in unstructured play. Strauss Lehtinen (1947) defined perception as "the mental process which gives particular meaning and significance to a given sensation and therefore acts as a preliminary to thinking." It is through auditory and visual perception, sensory motor, taste, and smell experiences that the individual organizes and understands his environment. The sensory systems then become the modes for perception to develop the conceptual understandings of one's environment. The development of perceptual capacities is essential to an understanding of the way in which children establish and maintain contacts with the world around them. Acoording to Gollin (1965) there is apparently a developmental progression from perceptual dependency upon stimulus properties to conceptual operations. Bruner and his colleagues see the relationship of perceptual abilities to cognitive development in the behavior of the preschool child as receptive or respondent to stimuli, while the behavior of the older child appears to be determined far more by the plans or hypotheses the child generates rather than by immediate stimuli.

In order for behavior to become more skillful it must become increasingly free of immediate or serial regulation by environmental stimuli operative while the behavior is going on. The perception of the young child during the preoperational stage (2-7 years of age) is thought to be:

"stuck" or nontransformable;
"autistic" or subject to influences of affect;
diffuse in organization;
dynamic in the sense of being closely related to action;
concrete rather than schematic or abstracted;
egocentric in the sense of having a central reference to the child as an observer;

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marked by unsteady attention;
organized around a minimum of cues.

It can be seen from the developmental sequences of perceptual abilities that three-year-olds tend to be strongly guided by the perceptual nature of tasks and by a single perceptual feature at a time. The children are apt to base this notion of the world on some feature they can point to and they are apt to focus on a single aspect of the stimulation at any given time. By four years of age, children can handle one-dimensional orderings; and two dimensional orderings by five years of age.

According to Sutton-Smith (1971) four processes of play combine cognitive and perceptual abilities in the unstructured play of the young child. These processes describe the way the child approaches and interacts with objects or toys. The processes are:

imitation - This is copying the acts of another person;

exploration - The child analyzes how things work, what they can do and how things came to be the way they are;

testing - The child sees if things will have the effects he thinks they will have;

construction - The child understands the world by putting things together his own way.

The second understanding of children's play is that children make their own reality by adapting the adult logical thinking rule into their own egocentric system. Egocentrism refers to the child's inability to perceive and to imagine objects or events from viewpoints other than his/her own. It plays a central role in Piaget's theory of cognitive development.

The description of the development of the ability to consider the other person is complementary in each of the studies Flavell et al. (1968), DeVries (1970), Miller, Kessel and Flavell, (1970) and Selman (1973). Gash (1974) described this differentiation in the following way:

initially the child fails to distinguish between the thoughts and perceptions of the self and the other;
the child's sense of self is distinguished from the other but there is a failure to see any commonality of thoughts between the self and the other;
the child now attributes his/her own ideas to the other child but sees the other as having similar perspectives to himself/herself;
the child is now aware that the other child has perspectives which may or may not be similar to his own (Selman, 1971a).

The similarities between this view and the original description of this development by Piaget (in Elkind, 1961) are evident:

the child is initially unable to judge which is the right hand and which is the left hand of an experimenter sitting opposite;
the child begins to understand the difference but makes frequent errors in making the judgement;
the child can do the transformation when thinking carefully about the answer;
the child can make this transformation with ease. Similar progressions may be described for each of the different tasks mentioned above.

Where children create their own reality by adapting the work into their egocentric system they are constructing a logical sequence to deal with material objects. Children then work out a social interaction relationship with their peers and teachers which leads to a

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critical frame of mind where children must communicate with each other. These communication skills make it possible for children to question the adequacy of their own reactions and they may even question their own thought process or imitate and reshape their own thinking. Communications of this sort occurs when a child is able to work in an unstructured situation free of adult imposed rules and restrictions.

Piaget (1951, 1965) has classified children's play and games in terms of an analysis of the structures involved and the degree of mental complexity. He says the three stages he uses correspond to the three forms of intelligence:

sensorimotor - In the sensorimotor stage (birth through two years of age)- the child is very egocentric. Typical of this is the collective-monologue type of interaction with peers. This is the stage of practical games. Children play by themselves. The only play in which the child engages in what Piaget terms exercise play, a primitive form of play. It does not involve symbolism, but consists of repeating, for the pleasure of it, activities which the child has acquired, (i.e., when an infant discovers and hits a swinging object such as a mobile, then repeats the action at first to adapt to it and understands it). Then when the child uses this behavior for simple pleasure the behavior is an act of play.

representational - The child from two through six years of age engages in symbolic games. Reciprocity exists in complementary peer interactions where roles become differentiated. Children beginning to want to play in conformity with certain rules from the outside.

reflective - The child of six years and older engages in games with rules. These are usually transmitted socially from child to child and thus increase in importance with the enlargement of the child's social life. The decentering of affectivity occurs during this stage when the child's scope broadens from family centered activities to more expanded social relations and in the direction of a mutual respect and reciprocity. Recognition of rules as artifacts hence produces mutual agreement and reciprocity with peers.

It is the philosophy of the Child Development Center that the develcpment of play behavior is an integration of social, motor, perceptual and cognitive processes and that the development of social play is in fact the beginning of the group processes ontogeny.

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Multi-age Grouping

In the multi-age environment, two, three, four, and five-year-old children have the opportunity to interact across chronological ages on both a cognitive and social basis, with modeling behavior being paramount. It further affords the younger child, who is developmentally prepared to function at a higher level, the opportunity to imitate higher levels of play. Three and four-year-olds have the opportunity to view and imitate the actions of the five-year-olds while on the other hand the older child is the leader and often teacher and is developing self esteem. The older child can also revert back to levels where he/she knows he/she will meet success without the competitive pressures of an age-grouped environment. This environment allows children to choose whether or not they desire to incorporate the actions of other into their schema. The purpose of a multi-age environment is not intended to accelerate a child's cognitive or social behavior but to provide opportunity for imitation of various levels of behavior. Its thrust focuses on enriching the contacts children can experience. Multi-age environments allow children to progress on a developmental basis when they are capable of attaining higher intellectual levels of reasoning and social levels of play.

Children who demonstrate large developmental delays in any area of development (more commonly termed high risk) benefit from multi-age grouping. This is because the environment must be individualized to meet the needs of normal two-year-olds and five year olds. The adult has to vary the physical, verbal and/or social environment only slightly to meet more gross differences in development since a large range already exists. High risk or delayed children also benefit by modeling the more normally developing child.

Independent Learner

In order to achieve anenvironment in which children work at different cognitive and social activities and at their own pace, children must be able to function as independent learners. To be independent learners children must learn skills necessary for classroom management that enable independent activities. The basic philosophic premise that is used in the Child Development Center to develop independent learners stems from John Dewey. In directing the child's behavior the adult bases all decisions on the yardstick "the child may do anything he/she wants to as long as he/she does not infringe on the rights and property of others or injure himself/herself." The child therefore becomes responsible for his environment. He/she must put away any toy, object or materials he/she selects. If a puzzle turns out to be too difficult after a child has begun it either an adult or more capable child assists the child in completing it so that it can be put away just as it was found. This behavior is acquired through modeling, social praise and if necessary tangible reinforcement.

The child-centered environment facilitates freedom of choice. The child has the opportunity to group himself/herself according to his/her own desires. He/she is able to engage in solitary action or to group according to his/her own wishes without adult interference. Therefore, this environment allows the child to select equipment or to group according to his/her intrinsic needs.

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Physical Environment

The University of Virginia Child Development Center opened September 25, 1972. During the first four months the center was located at the Children's Rehabilitation Center of University of Virginia Hospital in a small room with a one way mirror dividing it from the room next door which was used for observational purposes. The location of the building was convenient to the University and a shuttle ran from the University grounds to the Center every 15 minutes. In January, 1973, the Child Development Center moved into the new School of Education Building. Our new facility include an office for the director of the program which is used for meetings and conferences. The office provided for the head teacher allows space for the educational materials and books to be checked out by Early Childhood students as well as a facility for conferences, and space for graduate students working on the Child Development Center. The secretarial staff is located in an office next door to the classroom.

The classroom itself is 32'x17' and is fully carpeted, although a sheet of linoleum covers the art/snack area. The carpet reduces the noise level and provides a comfortable surface for play activities. Great care was taken to create a stimulating, interesting, and aesthetically pleasing environment. One wall, painted bright yellow, displays blown up paintings of children's art work and depicts the developmental stages from scribbling to a more sophisticated representational art. On the opposite wall, large sheets of cork and fish net are arranged in a balanced design and are also used to display children's work. Another wall contains a blackboard lowered to a height suitable for children.

Architectural students designed a loft in the Child Development Center in the summer of '73. The loft enables us to take advantage of "wasted space" as the top provides a convenient place for reading. A shag rug, bookshelf, bean bag chair, and small plastic chair are located on the top of the loft. The ground area of the loft serves as part of our housekeeping center.

In order to provide an environment which enhances independent learning, discovery, and exploration the classroom is divided into the following areas:

1. Individuation - includes compact red plastic cube serving as stove, sink, and refrigerator, dress-up cupboard, small table with chairs,

and a full length mirror;
2. listening center - includes a language master, record player, ear phones, and filmstrip projector;
3. library - includes bean bag chair and bookshelf. Some books are checked out from a public library, and we are presently building our own collection of appropriate children's books;
4. art and woodwork center - includes an art supply cabinet, woodwork table and tools, and one large table. Also on the linoleum is the water table. Painting on a double easel is done in the hall outside the Center;
5. block center - includes a set of assorted and plastic wooden blocks,
6. educational games and manipulative toys - includes a moveable storage shelf;
7. Montessori area - includes Montessori equipment and a moveable storage shelf;
8. multisensory concept center - example of a center can be found in Content Section in operationalizing the curriculum.

The storage equipment is child size and arranged so that the children can select and put away materials independently. Materials are stored in plastic containers that are easy for children to remove from the shelves and return as they were found. Equipment, toys, and materials must be appropriate to children's ages (two to six) and maturation levels. The educational materials are to a large extent self correcting so that the children do not rely on adult direction and intervention and should enable the children to perceive and correct their own mistakes. Materials must be non-toxic, sturdy, durable, and easy to keep clean. The audiovisual equipment must be "child proof" and simple to operate so that the children are able to use the equipment independently.

Following is a sample list of furnishings and equipment we consider appropriate for twelve children ranging from two to six years of age.

Physical facilities are seldom ideal and so it is important to plan wisely and make the most of the facilities you do have. A major drawback to our facility is that there is no sink or water in the classroom. Instead a water table is provided and used for water play and art activities. Another drawback is the children's bathroom which is located some distance down the hall from the classroom. It includes a child size sink and toilet. A blue line of mystic tape along the floor molding in the hall marks for the children the "path" to their bathroom. The School of Education Building is centrally heated and air conditioned. Room temperature should range from 68 to 72 degrees, but it is not always possible to maintain comfortable temperatures. There are no windows in the classroom and so outdoor play and excursions are vital to our program. Negotiations are now taking place for a permanent playground behind the building. UVA architecture students have designed an ecological and esthetic playscape. Although many people visit our school, we do not have space for an observation booth.

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The Child Development Center inventory lists basic classroom needs and then divides the remaining inventory into the areas of development: language, social, motor, and cognitive.

Basic Classroom
Moveable hinged low storage cabinets, 2, low and open for toys and blocks
Art storage cabinet
Large adult storage cabinet for supplies
Large round child size table and 10 chairs for art and snacks
Child size tables, 3, seating 3
Coat cabinet for children
Book display stand
Screen for movies and filmstrips
Wall to wall carpeting
Linolium floor covering the art area
Wastebasket
Cleaning supplies (broom, map, dustpan, sponges, soap)
Lavatory supplies - cleanser, 12 packages, paper towels, soap, toilet paper,
Kleenex

Cognitive
Playing cards for children
Numbers, squares and rods - complete set plus 6 containers (plastic) or rods
Color cubes
Color pattern board
Symmetry dominoes
Peg number boards
Lotto-color
Lotto-size
Lotto-shape
Shape dominoes
Number sorter
Sequence game
Flannel board - opposites
Classification games
Colored blocks
Wooden cylinders

00019

Numberal puzzle
Math sorter
Wooden geometric solids
Number rods
Thermal cylinders
Froebel blocks
Plastic counters and sandpaper numerals
Plastic shapes
Sorting box
Weight cylinders
Multi-sensory cubes and spheres
Colored beaded alphabet cards
Attribute blocks
Size sequencing cards - halves to wholes
Sequential picture cards
Colored inch cubes
Colored inch cubes designs
Peat tray
Herb garden
Cutlery set and holder
Peg numerals
Numeral jigsaw
Child size ruler
Giant magnet
Water play kit
Five boat fleet
Toy money
Sort-a-card game
Classroom counting frame
Canned numbers and shapes
Photto lotto

Language
Puppets, 5
Plastic farm animals
Beginning sound game
Language master
Automatic filmstrip projector and tape recorder
Record player
Camera
Slide projector
Picture alphabet match-ups
Magnetic alphabet board
Sound boxes
Sound bells
Language expressive circles
Multi-ethnic puzzles
Job puzzles
Make a word cards
Association picture cards
Motor expressive language cards
Story telling posters
Alphabet jigsaw
Wild animals flannel aid
Domestic animals flannel aid
Farm animals flannel aid
Pets - prints and record

00020

300 animal prints and record
Spring prints
Fall prints
Winter prints
Art reproductions

Motor
Unifix cubes
Perception puzzles
Animals puzzles
Wooden jigsaws
Large plywood puzzles
Knobbed large plywood puzzles
Look in puzzles
Child's rocker (wooden)
Spatial relation cards
Parquetry insert boards
Symmetrical match-up cards
Visual discrimination cards
Same or different cards
Same or different proportion cards
Visual discrimination matching set
Form puzzle
Size and shape puzzle
Dimensional puzzle
Animal puzzles
Steel drum
Tub drum
Bells
Tom-Tom
Triangles, 3
Gong bell
Tic tac toe
Spinning tops
Threading sequence
Easel
Stamp pad art kit
Draft rolls, 4
Corrugated paper, rolls, 4
Tissue assortment - 15"x20"
Gummed papers
Gold paper
Silver paper
Colored tablet
Fluorescent paper
Crayonwax crayons
Crayola
Glo-rite crayons
Water crayons
Tempra paint, 12
Finger paint, 6
Clay
Playdough
6" scissors, 15
Watercolor marker sets, 6
Hardwood dominoes
Stacking elephants

00021

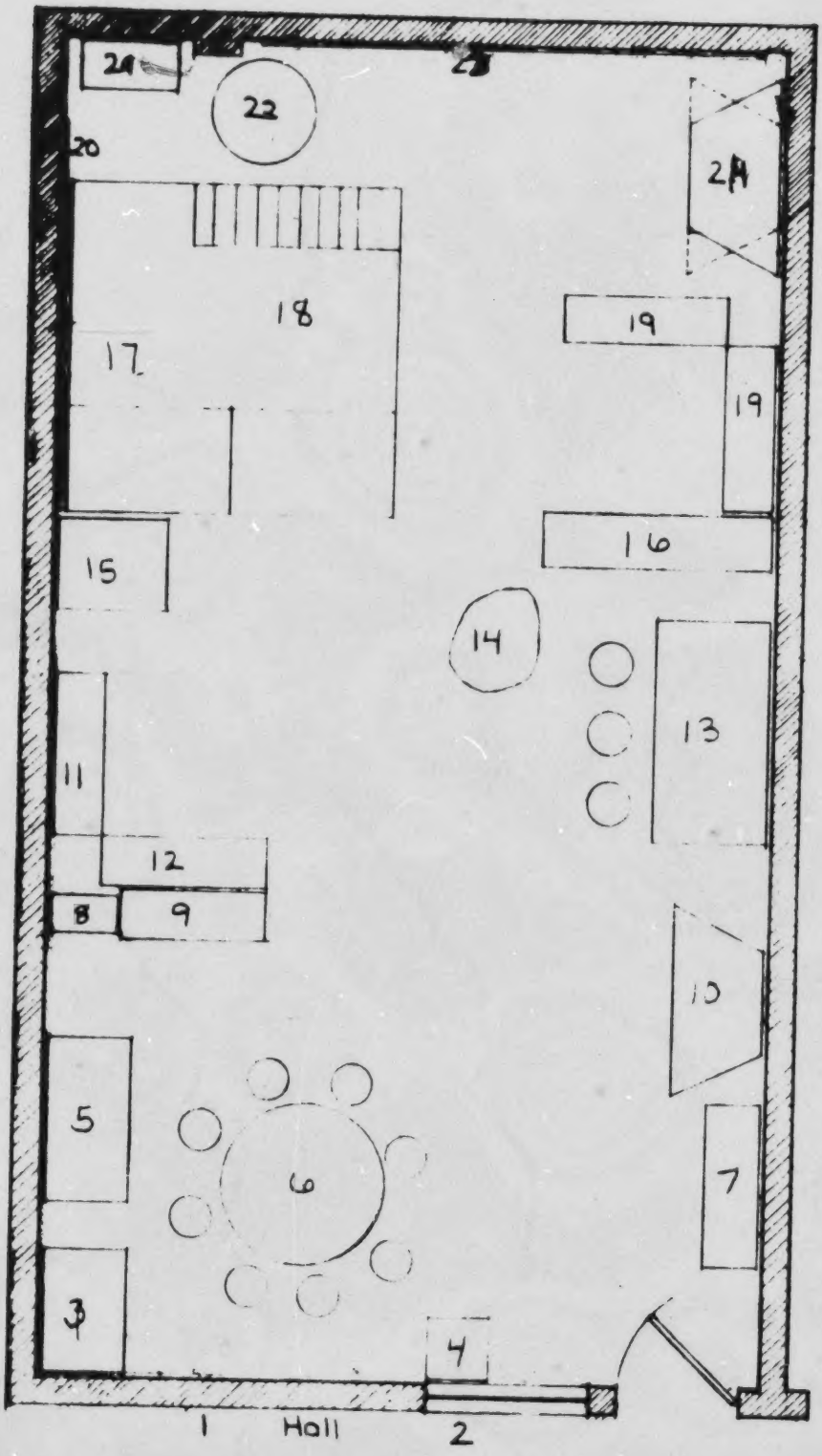
Perception plagues, 2
Bead patterns
Large colored beads
Plastic snap beads
Plastic nesting cups
Wooden beads
Crystal climbers
Mosaics
Jumbo rubber peg board
Jumbo pegs
Stacking discs
Metal insets
Nesting blocks
Plastic nuts and bolts
Jumbo alpha-numbers
Moveable plastic steps
Balance board
Balance beam
Loft
Tricycle
See-saw
Rocking boat
Roll-o-sphere
Carpenter's table with fise
Adult size tools (hammer, pliers, hand drill, saw, screwdriver, sand paper, nails, woodscraps)

Social
Mirror
Child sized tea set
Blender
Truck (wooden)
Fire engine (wooden)
Snowtruck
Play tea pot
Play aluminum pans
Rag dolls, 4
Cloth blocks
Hats
Doll clothes
Varieth of dress up clothes
Dressing frames: 1. button-large
2. button-small
3. snap
4. tie
5. zipper
6. buckle
Body puzzle, boy and girl
Many faces of children posters
Black people puzzle
Caucasian people puzzle
Wall mirror
Stethoscope
Six car oval and figure-8 crossover set
Hardwood doll furniture
Open-top doll house
Moods and emotions, prints

00022

Housekeeping cube
Family group
Clothespin doll, girl
Corncob dolls, men
Corncob dolls, women
Corncob dolls, babies
Paddlewheel boat
Sail boat
Blonde wig
Regular wig
Sunglasses
Powder compacts
Razor
Hair brushes
Vanity box set
Sheer gloss
Powder puffs
Sock dolls
Rocking chairs
Straight chairs
Rag dolls
Wooden telephone
Wooden toaster
Water table, 22"x48"x6" deep
Water play materials - plastic
Measuring cups, child size water pump
Funnels, sponges, egg beaters

00023



Guide for identifying Center:

1. Easel painting
2. Woodworking
3. Storage cabinet
4. Refrigerator
5. Watertable
6. Art/snack table
7. Coat cabinet
8. Cooking equipment
9. Art supplies
10. Cognitive center
11. Gross cognitive and perceptual motor equipment
12. Large blocks
13. Language center (language master, record player, filmstrip, projector)
14. Bean bag chair
15. Doll house
16. Montessori equipment
17. Loft (housekeeping equipment - ground level
18. Loft (reading area - upper level)
19. Fine cognitive and perceptual motor equipment
20. Full length mirror
21. Dress up corner
22. Housekeeping table
23. Child size blackboard
24. Concept center

Scale 1/4'

00024

DEVELOPMENTAL CURRICULUM MODEL

Using the Comfield teacher training model (Schalock, 1969), the first step of curriculum planning was to identify developmental learner outcomes for children, birth through approximately age seven. This was done mainly by reviewing the existing literature in child development. Ontogenies were compiled in the areas of social, perceptual and physical abilities, perceptual motor, language, and cognitive development. From these ontogenies the goals of early childhood education have been derived.

Secondly, conditions in the child's environment that will bring about the learner outcomes were identified. These conditions became the curriculum for the Child Development Center. The University of Virginia early childhood curriculum consists of four major elements. These include the learner characteristics of the children, situational variables, teaching strategies or processes, and content carried by the selected strategy.

The set of conditions at any point in time stated as conceptualizations and performances are the basis for designing instructional experiences for children. More specifically:

Learner characteristics play a role in the type of response the child makes.

They include variables like the child's developmental level, response modes, socio-economic level, and the interest of the child at any given moment. Other learner characteristics found to be relevant are sex, native language, eyesight, hearing, attending ability, and timing.

Situational variables have to do with the physical content and group structure of the preschool environment. The adult-child ratio is an obvious situational variable. Other viables include placement of materials and equipment, freedom of movement, time schedule, teacher-child rejection, failure and experiences in truancy and segregation.

Instructional variables are learning strategies. Learning strategies are related to the pattern of the teacher's behavior - the manner in which she/he elicits pupil response and the type of feedback she/he gives the child's response. At the University of Virginia Child Development Center two basic instructional strategies or processes developmental and directive are used.

Content carried by the strategy is the conceptual understandings the teacher identifies relating to the concept being introduced in the preschool environments or is dependent upon the child's words or the objects that the child is attending to. The developmental process infers that in many situations the child's motivation and attendings decide the content.

While planning this type of curriculum one must look at the variables in conditions for learning. Following are steps in setting conditions for learning:

1. Assess to determine the child's present level of operation for a given developmental outcome.
2. Determine the developmental learner outcome which will relate to the next developmental level or broaden skills in the present developmental level depending on information received in (1).
3. Evaluate learner characteristics of the child as they related to the outcome.
4. Evaluate situational variables.

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5. Select appropriate strategy for the child that takes into account 2, 3, and 4.
6. Determine content for the strategy.
7. Organize the learning environment.
8. Implement the designed conditions.
9. Continually assess where the child is in relation to identified developmental outcomes.

Table I contains a schematic representation of the Comfield teacher training model.

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(1)	(2)	(3)	(4)
Specify the outcomes desired from education	Specify the conditions that bring about the educational outcomes desired	Specify the knowledge, skills, and sensitivity needed by learning facilitators (trainees) to be able to create the conditions to bring about the educational outcomes desired.	Specify the conditions that lead to the knowledge skills and sensitivities needed by learning facilitators (trainees) to be able to create the conditions to bring about the educational outcomes desired
The goals of education	The instructional program within the educational systems	The goals of program to prepare learning facilitators (trainees)	The instructional program within the college
Formal & continuous decision making about the goals of education	Research on principles of instruction	Evaluation of the longterm effects of the program	The completion of the program
Assess whether the outcomes specified for education are in fact those that are desired and/or are appropriate	Assess the consistency with which the conditions expected to bring about desired educational outcomes do so	Assess whether such learning facilitators (trainees) consistently create the conditions that bring about the educational outcomes desired	Learning facilitators (trainees) with specified competencies, i.e., with known ability to bring about specified educational outcomes
(8)	(7)	(6)	(5)

Table 1.
A schematic representation of the systems design process applied to the design, development and adaptation of an education program.

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CIRRICULUM OUTCOMES: CHILD DEVELOPMENT ONTOGENIES

The developmental outcomes for children in this curriculum have been identified from the child development literature. The significance of each outcome is evidenced by an accompanying ontogeny which demonstrates the sequence of a child's development.

The major developmental areas which contain outcomes and ontogenies are listed below. Each of these areas has several outcomes and growth sequences within them.

Language Development

Auditory Perception
Auditory Acinty
Focus of Sound
Figure Ground Discrimination
Auditory Discrimination
Auditory Memory
Sequencing, Sequential Retention, and Synthesizing of Sound
Classification, Integration and Monitory of Sound
Phonology
Class of Sounds
Untonation of Sounds
Stress of Sounds
Semantics
Syntax
Grammar
Fluency
Reading Readiness

Cognitive Development

Seriation
Temporal Relations
Spatial Relations
Classification

Motor Development

Perceptual Abilities
- visual acuity
- visual attending
- visual memory
- constancy
- figure ground perception
- discrimination
- depth perception
- movement perception
- body awareness
- laterality
- directionality
- verticality

Physical Abilities
- balance
- flexibility
- strength
- endurance

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Perceptual Motor Abilities
- fine motor
- visual fine motor
- locomotor
- purposive skills: production and reception of force

Social Development

Self Help Skills
- eating
- clothing
- personal cleanliness
- communication

Individuation
- body image
- self image
- self concept
- self esteem
- self determination

Behavioral Adjustment to Society
- appropriate enduring relationships with people
- appropriate reality orientation and constructive use of fantasy
- controls for appropriate handling of drives, e.g., capacity to delay gratification and constructive use of aggression
- gratification of goal directed activities precursors of appropriate achievement motivation.

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LANGUAGE DEVELOPMENT

It is a recognized understanding of society that language development is important. A language is a system of linguistic symbols that can be described in terms of having four primary color parts: phonological, semantic, grammtical, and morphological. Linguistics is the scientific study of language. Areas of study of linguistics are phonology, morphology, syntax and semantics.

Phonology is the sound system of a language. It consists of three elements. In the English language there are the 44 phonemes, intonation or pitch. Semantics refers to the lexical meanings of words. It involves giving labels to objects or events. Syntax or grammatical forms of language deals with comprehension and formulation of basic sentence structure, transformations and morphological forms. Morphemes are the smallest unit of meaning. They can occur alone as a word or not alone as ing, un, pre, which are called "bound".

One of the most useful concepts to come out of linguistic research is that the language development of children is not a purely imitative process but is a rapid and highly complex operation in which the child abstracts patterns of language from his environment, internalizes them, tests them, combines them with other patterns already learned, and uses them to generate an endless variety of possible utterances.

All human language have certain distinctive properties:
they are learned;
they include conventional, arbitrary signs for meanings or for referents which may be displaced in time or space; and
they include conventional units and rules for the combination of those units.

Language is basic to all communication encompassing reading and writing as well as the spoken word. Language is an organized set of symbols used for communication; a union of the reception, integration and expression of information.To develop a language system, a child must be able to receive stimuli and classify them by coding, sorting, selecting, organizing, and retaining this incoming information. Then, these informational bits can be translated into a verbal context prior to reading, writing, or speaking.

There are definite interrelationships between receptive and expressive language skills. Specific skills that can be isolated that one can develop in children to better enhance the interaction of reception and expression.

The intricate process of language development is dependent upon the organism's ability to receive, integrate and express linguistic symbols. These linguistic symbols are received through two of the major sensory channels: vision and audition. Reception of the written word is achieved through reading; the spoken word through listening. Expressive language is found in writing and speaking - these functions require vision, audition, and motor skills. The communication skills may be classified as below:

	Encoding Expressive	Decoding Receptive
Oracy	Speaking	Listening
Literacy	Writing	Reading

00030

Language acquisition occurs in a short time. Grammatical speech does not begin before 1-1/2 years of age, yet according to existing data, the basic process is complete by 3-1/2 years. Thus, a basis for the competence of adult grammar must emerge in the span of 24 months (McNeill, 1966). By the time the average child is 6 years old he has mastered nearly all of the phonemic distinctions of his language and almost all of its common grammatical forms and constructions.

Linguistic studies are adding support to the growing opinion that the capacity to acquire language may be transitory; it may reach a peak at age 2 to 4 and decline thereafter. It may even disappear altogether as a special capacity with the beginning of adolescence as there seems to be a cut-off at puberty in the ability to acquire a second language.

When the basic grammatical relations are assigned a place in the child's innate linguistic endowment, the pattern of language acquistion if found to be universal. Greenberg (1963) in a survey of some 30 languages has found these grammatical relations to hold in every case; there appears to be no language lacking such concepts. Thus, a child who knew them could begin acquiring any natural language by discovering how each of these relations is expressed locally.

Early speech of children reflects severely limited grammatical classes, which are used in simple hierarchical rules. The rules reflect the basic grammatical relations; there is little else. These aspects of child's competence - classes, rules, and relations - are all part of the base structure of sentences. The child's earliest does not reflect the operation of transformational rules; those seem to come into the child's grammar later. Children begin their grammatical development with the part of syntax that is necessary to semantic interpretation and only later attach the grammatical machinery that in mature grammar provides input to phonological interpretation (McNeill, 1966).

If children begin their speech with a competence limited to the base structure of sentences, it is difficult to see how speech can be explained by any theory of language acquisition that restricts attention to the child learning the observable surface of characteristics of parental speech. Such theories would have to predict the opposite course of development: first, surface structure; then, base structure.

Auditory Perception

..we live immersed in a world of sound. It is probable that human beings spend more time in listening than in any other activity and, yet, we do not know how an individual learns to listen, how thus function develops, or the ways in which it is influenced by psychological variables (Sabatino, 1969, p. 730)

When the topic of auditory perception is discussed it can be broken

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down into the three general areas of (a) auditory acuity, (b) auditory discrimination and (c) auditory memory. The role that each of these play in auditory analysis and synthesis, and total language development is important.

The auditory process has been sub-divided by Falck (1973) into the following categories:

1. Signal reception: auditory sensitivity and auditory localization
2. Signal analysis and acceptance
   auditory scanning-attention,
   figure-ground choice,
   discrimination,
   auditory closure,
   auditory monitoring (Feedback);
3. Signal retention:
   immediate and delayed auditory recall,
   memory for meaningful material (memory for ideas),
   auditory sequencing in temporal order;
4. Signal synthesis and integration:
   auditory association semantic concept (language),
   auditory comprehension; and
5. Signal convergence and divergence:
   creative, innovative, evaluative cognitions via auditory channel.

Generally, perceptual disorders are categorized according to the sensory channel affected (McGrady and Olsong, 1970) which means that most studies have dealt with visual, motor and auditory dysfunctions as broad categories rather than more discrete skills as mentioned above. Sabatino (1969) feels that the process of auditory perception is broken down into four, rather than three, stages as illustrated below:

1. the recognition of sound elements as meaningful information,
2. the retention of these units of information,
3. the integration of the symbolic relationships of these units as the language concepts, and
4. the comprehension of language symbols through the three previous stages or steps of auditory, perceptual function (p. 730).

For the purposes of this curriculum model auditory perception is segmented into seven different developmental factors. To some degree they are sequential in their development although there is not enough research evidence to determine whether the latter areas occur simultaneously or sequentially. These areas are as follows:

Auditory Perception Outcomes

Auditory Acuity
Focus of Sound
Figure Ground Discrimination
Auditory Discrimination
Auditory Memory
Sequencing, Sequential Retention and Synthesizing of Sound
Classification, Integration and Monitoring

Regardless of how one wishes to categorize or subdivide auditory perception it is almost universally agreed upon that dysfunctions in the auditory sphere can and do result in some of the most severe and difficulty to diagnose and treat forms of developmental language disorders. Wepman, Johnson and Myklebust have been the leaders in the field in respect to emphasis upon auditory handicaps and their in-

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fluence upon competency in speaking, reading, spelling and writing. According to these authorities a substantial proportion of children in early elementary grades may manifest inadequate auditory skills (Vellutino, DeSetto and Steger, 1972).

Over the past decade the greatest emphasis has been on auditory discrimination skills rather than those of memory and acuity and have utilized primarily one test of auditory discrimination when assessing a child's auditory perception. A recent study of a group of dysphasic children has shown that they do not differ from normal on performance on visual-motor tasks, but do on auditory-vocal tasks with the exception of one task, where there was no significant difference, and that was on auditory discrimination (Weiner, 1972). This emphasizes the necessity to look at the total area of auditory perception.

Auditory acuity. Auditory acuity is awareness of sound or stimulus detection.

Auditory acuity is the ability to hear to a degree that information relayed by the auditory channel is received by the audition sense modality. In essence this is the ability to have functionally normal hearing to receive any form of auditory communication. It is not a process that involves attaching any meaning to what one hears. Most authorities agree that reduced auditory acuity can affect an individual's language development.

Hardy and Bordley (1960), in a study to outline and define the pertinent structures and functions involved in the activity called hearing, found that to effectively evaluate hearing in children, the child's developmental landmarks are extremely important, often more than measurements. The first developmental level of hearing is obviously the ability to detect sound.

Miller et al. (1963) observed response of three, four and five month old children to auditory stimuli. They found that younger children respond to unexpected or loud sounds by an automatic reaction such as spreading of toes, wriggling nose, eye movements. Older children responded by localizing the source of the sound.

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Auditory Perception: Auditory Acuity

Age in months	Stage	Appropriate Equipment	Alternate
1	Quieted by voice; activity dimenished when approached by sound; turns head towards source of sound.	Human voice	Talk to infant as he/she is engaged in an activity. Observe child's reaction to your voice.
2	Attends to human voice. (Cattell)	Human voice	
3	Anticipates feeding by noises and visual stimuli.	NA	Observe child's reaction to feeding routine.
6	Up to six months either body movements or cessation of an activity such as sucking, crying, etc.		
7	After six months child has learned to "tune out" sounds if not interested and therefore may give impression of not hearing.		

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00034

Focus of sound. Focus of sound is sound localization. Its the ability to determine where was the sound and level to attend to sound.

Difficulty in attending to auditory stimuli may be related to:

low level or absence of hearing acuity;
distractibility - competitive visual or auditory stimuli;
hyperactive behavior;
severe emotional disturbance;
severe mental retardation; and
inability to obtain meaning from auditory stimuli.

To date there is no affective means of assessing the reasons for inattentiveness.

Little research exists on most efficient ways to teach attentiveness to sound. Literature mostly describes clinical approaches, e.g.:

amplification to intensify stimuli and awareness;
sound producing devices which can be manipulated by the child; (toys, musical devices, appliances, etc.)
turning child's head toward sound source;
making sound source visible when child turns head; and
behavior modification principles.

00035

Auditory Perception: Focus of Sound

Age in months	Stage	Appropriate Equipment	Alternative
3	Looks at speakers face	Speaker	Speaker looking at child.
4-5	Turns head deliberately to voice & will search for source of voice or sound (Cattell).	Speaker	
6	May be able to locate familiar sounds such as their mother's voice.	Mother's voice.	
9	Enjoys mother's imitation of his own sounds more than he enjoys other sounds.		
9-10	Not distracted much by various environmental sounds.		
11-12	Interest begins in environmental noise in test situation; outside immediate test situation.	Vacuum cleaner, dishwasher, etc.	
12	Likes to listen to words.	Picture books	
17-18	Listens to rhymes and songs for 2-3 minutes.	Picture story books.	
18	Enjoys picture book.	Cloth books.	

00036

Figure ground discrimination. Figure ground discrimination is the ability to determine if there was more than one sound. Auditory figure-ground selection has to do with the ability to select relevant from irrelevant auditory stimuli in the environment.

Other associated behaviros to distractibility, short attention span, and ignoring some auditory stimuli in listening activities are associated behaviors which influence figure-ground discrimination.

Little research on teaching children to discriminate significant from insignificant stimuli. Great need to research this ability relative to other important variables - aspects of attention, organic conditions of the brain, effect of drugs, nature and presentation of auditory stimuli.

To informally measure this ability one can present a significant stimuli and at the same time an irrelevant stimulus and ask the child if he/she heard the significant stimulus or if he/she could produce it.

Auditory closure is related to figure ground discrimination. It is the ability to fill in the missing parts of verbal expression or to integrate discrete units into a whole. Auditory closure is an automatic function which occurs in everyday life in situations such as understanding foreign accents, speech defects, or poor telephone connections.

Auditory discrimination. Auditory discrimination is the ability to differentiate auditory signals from auditory noise when differences between signal and noise are minimal. More specifically the child is expected to develop the following auditory discrimination skills:

To be able to determine if the sounds were the same or not the same.
To identify rhyming words.
To distinguish the sounds of the various phonemes.
To identify the sounds of the various phenemes.
To be able to identify the degree of sound as in loud and soft sounds or big and little sounds.

To develop discrimination of stimulus (sound) one must recognize common properties of sound, those of duration, intensity, frequency, timbre, and prosodic change.

Auditory discrimination involves discriminating sounds varying on one acoustic dimension - (same/different). Verbal or non-verbal responses can be used for informal assessment. Non-verbal like performing an agreed upon actions pointing to a pair of like or unlike objectives.

The dimensions of frequency, intensity, like or unlike speech sounds, and like or unlike noises can be used. Sounds may be human (vocal sounds, words) or non-human (bells, watches, machines, etc.).

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Auditory Perception: Auditory Discrimination

Age in months	Stage	Appropriate Equipment	Alternative
5-6	Distinguishes between friendly and angry talking.		
6	Demonstrates interest in human voice. Reacts to music by cooing.	Records, radio	Observe child's reaction to music.
9	Show increasing ability to locate quiet sounds like a rattle held 2 feet from the ear.	Rattle	
15	Should be able to locate quiet sounds automatically.	Rattle, vacuum, train car.	Shake rattle out of child's vision. Observe reaction.
30	Gross sounds distinguished by the child.	Dishwasher, car engine, vacuum, T.V., lawn mower.	Ask the child to identify sounds in the environment.
60	Able to respond to whispered or quietly spoken words and able to recognize such speech sounds as P, T, K, and S spoken three feet.		Whisper directions.

000038

Auditory memory. Auditory memory involves short and long term recall which involves several auditory skills. Auditory memory as traditionally studied has been the ability to repeat very short messages in situations without much distracting stimuli (Dallett, 1964). Auditory memory tests are usually repeating digits, sentences, and nonsense syllables. Auditory memory is highly related to auditory synthesis for example, if a child has difficulty going from parts-to-whole (synthesizing a consonant-vowel-consonant combination) it is not unusual to find him two to three years delayed in auditory memory. Memory deficiencies may be observable as young as four years of age. This is a skill which is important to language development if one accepts the theories of auditory feedback systems. It concerns the time element involved between a speaker's utterance, the listener's perception of the utterance and his/her reply or repetition of the signal. Most measures of auditory memory have dealt only with the ability to recall and repeat a series of digits. Many studies conclude that auditory memory increases with age (Metraus, 1942; Beebe, 1944; Kaufman and Ivanoff, 1969; Robbins, 1942), but none agree as to rate of increase and at what age auditory memory reaches a plateau.

00039

Auditory Perception: Auditory Memory

Age in Months	Stage	Appropriate Equipment	Alternative
24-30	Able to repeat 2 digits in sequence (ITPA) (Cattell) (SB)		
30-36	Able to repeat 3 digits with 2 trials (ITPA) (Cattell) (McCarthy) (SB) Recalls one of eleven items from story adult tells (McCarthy).		
36-66	Able to repeat 3 digits on first trial (ITPA, McCarthy).		
42-72	Able to repeat 4 digits on second trial (ITPA) (McCarthy) Recalls two - 11 items from a story adult tells (McCarthy).		
48-60	Able to repeat 4 digits on first trial (ITPA) Recalls 3 of 11 items from a story adult tells (McCarthy).		
54	Repeats 2 digits backwards (McCarthy) Recalls 4 of 11 items from story adult tells (McCarthy).		

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Auditory Perception: Auditory Memory

Age in Months	Stage	Appropriate Equipment	Alternative
60-72	Able to repeat 5 digits on second trial (ITPA). Recalls 5 of 11 items from story adult tells. (McCarthy).		
66	Recalls 6 of 11 items from story adult tells (McCarthy).		
72-95	Repeats 3 digits backwards (McCarthy). (SB). Able to repeat 5 digits on first trial (ITPA)		
78	Recalls 7 of 11 items from story adult tells (McCarthy).		
90	Recalls 8 of 11 items from story adult tells (McCarthy).		
102	Repeats 4 digits backwards (McCarthy)		

00011

Sequential retention and synthesizing sound. Sequential retention and synthesizing includes the following abilities: (a) to be able to determine the sequence of sounds; (b) to be able to determine what was the length of time between sounds (first, next, last); and (c) sound blending ability to be able to go from parts-to-whole.

The literature on auditory vocal analysis and synthesis suggests that both are an outgrowth of concern over auditory memory and sequencing abilities. Orton was convinced that speech and reading problems are the result of inability to recall sounds in proper temporal sequence (Aten and Davis, 1968). More recently a study by Huffman and McReynolds (1968) states "sequential behavior is necessary for the acquisition of language skills". One would have to agree that both analysis and synthesis of words require sequencing skills.

Riper (1950) defines analysis and synthesis as the vocal phonic ability of a child to break down and recombine sound sequences. Johnson and Mykelbust (1968) report that in addition to their studies Ingram and Gates (1968) have studied children who could not build words from their sound components due to synthesizing problems, but few research studies have dealt with both analysis and synthesis skills of children. Additional references indicate that these skills should be present in the child or six or seven years of age. Van Riper (1958) feels that vocal phonic ability, although based to a considerable degree on natural abilities, is probably learned and increases with age. It is apparent that auditory vocal analysis and synthesis skills play an important role in the total language system, both spoken and written.

Several studies have reported upon the relationship of synthesis, or sound blending skills, and the language skill of reading. The conclusion is that there is a significant correlation between synthesis level and reading achievement (Bannatyne and Wichiarajote, 1969).

00042

Auditory Perception: equencing and Synthesizing Sound

Age in months	Stage	Appropriate Equipment	Alternative
28	Able to blend 2 sounds with picture of the object (ITPA)		
30-46	Can recall chain of 4 words (Mc Carthy) Repeats sentences of 4 words (WPPST) Repeats tapping sequence on xylophone notes (1, 2, 3, 4) (McCarthy).		
42-48	Repeats tapping sequence on xylophone notes (1-3-4) (McCarthy).		
46-49	Repeats sentences of 7 words (WPPSI)		
49-61	Repeats sentences of 9 words (WPPSI)		
50	Able to blend 3 sounds with picture cues (ITPA).		
54-60	Repeats tapping sequence on xylophone notes (2-4-1) (McCarthy).		
61-67	Repeats sentences of 12 words (McCarthy).		

00043

Auditory Perception: Sequencing and Synthesizing Sound

Age in months	Stage	Appropriate Equipment	Alternative
66	Repeats tapping sequence in xylophone notes (4-1-2-3) (McCarthy).		
73-79	Repeats a sentence of 13 words (WPPSI)		
78-90	Repeats tapping sequence on xylophone notes (2-3-1-4) (McCarthy).		
90-96	Repeats tapping sequence on xylophone notes (1-4-3-2-3) (McCarthy)		
96	Able to blend 4 sounds (ITPA)		

00014

Classification, integration, and monitoring of sound. Classification, integration and monitoring of sound involves what the sounds and words mean. More specifically it involves the ability to distinguish and identify common sounds in the environment; to associate meanings with spoken words; to obtain meaning from sentence structure; to follow simple explanations; carry out one-step directions given orally then two-step directions, and to gain an understanding of what to look and listen for in experiences; "tune in" when directed to.

This ability to associate sounds with sound sources may be correlated with intelligence, auditory memory, ability to localize sounds, and acoustic discrimination. Myklebust (1967) describes difficulty in obtaining meaning from sound as asnosia which is a conditi where the individual cannot attribute meaning to any sounds in his auditory world. It tends not to occur unless aphasia is also present.

00045

Auditory Perception: Classification, Integration, and Monitoring of Sound

Age in Months	Stage	Appropriate Equipment	Alternative
7-8	Responds when called. Raises arms when mother says "come up" and reaches toward child.		
8	Looks at daddy when daddy is named		"Look at Daddy"; Observe response
9-10	Responds to verbal requests like "bye-bye"; activity stops when hears "no-no" or his name.		Give verbal request, for response.
11-12	Gives toy on request when accompanies by gesture.	Ball	"Give me the ball" (point to ball).
13-14	Knows own name		
15-16	One object in box identified when names. Finds "baby" in picture when asked.	Box-objects such as rattle, doll. Book containing pictures of familiar objects.	"Point to the rattle". "Point to the baby". Ask child to point to.
16	Recognizes hair, mouth, ears and hands when names.		Hair, mouth, nose, eyes of doll.
21	Will follow a short series of related commands.	Bring me the doll. Show me the book.	
23	Carries out 4 directions with ball.	Ball	Throw me the ball. Bounce the ball. Catch the ball. Run for the ball.
24	Likes to listen to reason of language, not just the sound.		
30	Obey simple commands spoken quietly at 3 feet such as "give the doll to mother" (SB)	Doll	Give simple commands.

00046

Auditory Perception: Classification Integration and Monitoring of Sound

Age in Months	Stage	Appropriate Equipment	Alternatives
37-42	Understands simple commands (Cattell).		
54	Child can perform three sequential commands given verbally (SB)		

00047

Phonology. Phonology is the sound system of a language. In many ways it is the most concrete aspect of language, yet its developmental sequence is poorly understood. Phonology in the English language, has three aspects: class of sounds, intonation and stress.

Class of sound. The first aspect is the 44 phonemes. These phonemes represent that class of sounds that make up the English language. It is the phoneme element of language which decides which sounds are the same and which are different. These are the smallest units of speech that serve to distinguish one utterance from another in a language or dialect. The phoneme then is the smallest indiversible phonetic unit affecting meaning and thus characteristic of human speech as distinguished from other sounds. Its introduction as a unit of analysis of language has benefited developmental psychologists as well as linguistics (Vygotsky, 1967). It has enabled psychologists to conduct cross-cultural research that demonstrates the innate capacity for language as well as mental sequence in language acquisition of children of different languages.

The 44 phonemes are really families of sounds called allophones. This means there are several sounds that are used in a specific context. Dale (1972) gives the example of the three (k)'s: the unaspirated (k) in skit, which always comes after s; the front aspirated (k) in key, which comes before front vowels; and the back aspirated (k) in caw, which comes before back vowels. These different context of (k) are considered to be allophones of (k). An allophone then is a variant of a phoneme in a specific context.

00048

Phonology: Development of a Class of Sounds

Age in months	Stage	Appropriate Equipment	Alternate
0	Vowels: i, I, u, v, Consonants: h, k.		Reinforce vocalizations.
1	Consonants appear related to state of comfort or discomfort.		
2	Consonants: --, h, k, g Other consonants: r, p, b, m. Cooing: Glottal-velar consonant primarily.		
3	Vocalizations meager: "mews-mews" Small throaty noises, primarily vowel-like; Vowels: e, i, --		
4	Frequency in this order: h, -, g, k, c, d. Development to this point excludes environmental factors.		
5	Sounds more varied: some vowels dropped and new vowels added: overall articulation more distinct; consonants: k, g, t, d, p, b, h, -, f, v.		
6	Baby develops sounds by imitating himself - not adults; at end of 6 mos. can produce most of vowels & half of consonants; vowel sounds produced more than consonants; Babbling begins (self-initiated sound play).		
10	One or two "words" in vocubulary (no semantic content). Echolalia continues. Uses more consonants: h, d, b, m, and g.		

Phonology: Development of a Class of Sounds

Age in months	Stage	Appropriate Equipment	Alternate
11	Speaking vocabulary is one word other than "ma-ma" or "da-da" to designate an object or situation. Imitates syllables and words.		
12	Child practices phonemes of language of his community - the repetition of heard sounds (lalling); Chance sounds which seem to have meaning are reinforced by social responses to them. Repeats words under stress of repetition and imitation. Infant attends and discriminates speech of persons in environment. Begins to imitate speech of others and continue imitating his own.		
12-13	Can often say "bye-bye". Tries to get attention by squealing, making noises. Echolalia continues. If some of his actions laughed at, is likely to repeat. Speaking vocabulary is two words other than "ma-ma" or "da-da" to designate definite object or situation.		
14	Three words other than "ma-ma" or "da-da".		
15	Uses expressive jargon. Indicates wants by vocalizing and pointing. Speaks 4 to 7 words clearly.		
16	Five words other than "ma-ma" or "da-da". Consonants: h,d,b,m,w,t,n.		

80050

Phonology: Development of a Class of Sounds

Age in months	Stage	Appropriate Equipment	Alternate
18	May be a period of decreased babbling or complete silence before transition to meaningful word usage (some babble into linguistic stage).		
21	Fluent jargon to peak. Vocalization increases in variety. Talking is in form of play. Inflections are conversational in nature. Abandoning baby talk. "Thank you" instead of "ta-ta", etc. Consonants: h,d,b,w,m,n, g,t,s		
22	Consonants: D, b,h,m,t,s,k,w,g p.		
24	Speech process may temporarily slow at onset of walking. Consonant productions nearly equal vowel sounds. Consonants used primarily in initial and medial positions. Consonants: d,h,n,b, m,t,s,w,k,p. Increase accuracy of articulation. Average child usually has four front upper & lower teeth. Dental and post-dental sounds learned: o,t,d,n. Greater muscle control of tongue and lips. Discovers words are useful. Child usually acquires 10-20 words which can use meaningful including nouns, verbs and some adjectives and adverbs. Period of jargon where child strings various sounds		

15006

Phonology: Development of a Class of Sounds

Age in months	Stage	Appropriate Equipment	Alternate
24 (cont'd.)	together or develops words that may have meaning for him but for not one else.		
30.	Repeats syllables - two words.		
36	Four to seven year old children have difficulties with phonology in adding plural suffix 's' to words ending in 's' such as class; Greater growth in vocabulary within a shorter period of time than in any other period of life; 57% of sounds are produced correctly; l, s, r, and z are most often mispronounced; Has acquired lip sounds of p, b, and m; Able to use all vowel sounds and 2/3 consonants; Lauds are last sounds to be developed. Fairly intelligible speech. Substitution, ommission, and distortion of many phonemes inconsistent, varying with position in word and context. Final consonants appear more regularly than at 30 months.		
42	Phonemic gains. All English vowels and following consonants are used: /m/, /-m-/, /-m/, /-m/,; /n-/, /-n-/, /-n/, /-n-/; /t-/; /k-/; /p-/, /-p-/; /b-/, /-b-/; /f-/, /-f-/; /h-/; /w-/, /-w-/.		

0052

Phonology: Development of a Class of Sounds

Age in months	Stage	Appropriate Equipment	Alternate
42 (cont'd.)	Articulation still characterized by ommission of many medial consonantal phonemes and syllables; Rates of speech increased.		
48	77% of sounds are produced correctly; Speech may be infantile but usually understood even by those outside the family; Developed dentals and gutturals - t, d, n, k, g, and ng; Can repeat a sentence of 6 syllables; Speech forthright, not likely to carry on long conversation; Plurals are usually learned by age 3 but there are large individual differences. 98% of speech intelligible. Articulatory omissions and substitutions sharply reduced. Some blocking and associated overt mannerisms may continue.		
54	Appearnace or stabilization of phonemes: /s-/; /-s-/; /f-/, /-f-/, /-f/, /tr-/; /kr-/; /-tf-/, /-tf/. Phonemes /l/, /r/, /s/, /e/ not stabilized in any position. Reverse order of sounds within word occasionally: reflects lack of memory for bits.		
60	Articulation generally intelligible but phonemes /f/, /v/, /l/, and /s/ are not stabilized in all positions or in all contexts. The lab-		

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Phonology: Development of a Class of Sounds

Age in months	Stage	Appropriate Equipment	Alternate
60 (cont'd.)	identals, f and v; Repeats sentence of 10 syllables. Talks without infantile articulation.		
66	Intelligibility of speech: 89% - 100%.		
70	88% of sounds are produced correctly; Improvement shown in mastery of consonants and consonant blends. Consistency in inaccuracy of production of same sounds becomes greater as child gets older.		
72	Sounds made by complicated tongue and lip movements, l, r, ah, and ch.		
72-84	Phonemic proficiency established in /l-/, /-l/, (-l-); /-t-/; /r/, /-r-/; (--/; /j-/.		
84	Other complicated lip and tongue sounds, s, z, sh; blends st, sl, p..		
84--96	Ponemic profieiency established in /-z-/; /-st/; /-lz/; /-tr/; /-kt/.		

00054

Intonation. The second aspect of the sound system is intonation or pitch. A common example of differences in intonation is the difference between a question "the time is now?" and the statement "the time is now." Pitch varies in the sexes in that young children and women tend to have a treble pitch to their voices whereas men have bass voices which are usually an octave apart. The importance in speech and vocal music expression is the contrast within a person's sound system and not his/her general sound level. One can usually dtermine whether a person on the other end of a telephone is a man, woman, or child by his general pitch level. It is the contrast within that level that enables us to determine meaning. It also becomes a part of a person's total self in the way others view him/her, e.g., he's a monotone is sometimes connotated with he is boring to listen to versus she has a musical voice is that the individual uses a large amount of contrast in pitch and therefore her voice takes on pleasing characteristics to the ear.

00055

Phonology: Intonation

Age in Months	Stage	Appropriate Equipment	Alternative
12	Begins to imitate speech of others and continue imitating his own		
12-13	Squealing making noises.		
14	Three words other than "ma-ma" or "da-da". Tries to sing.		
15	Uses expressive jargon. Indicates wants by vocalizing and pointing. Speaks 4 to 7 words clearly.		
21	Begins to hum and sing. Inflections are conversational in nature.		
24	Jargon may have disappeared, but not sing-song which often made jargon musical. Imitates words used by adults perfectly even intonation and inflections without knowledge of meaning.		
36	Speech melody develops rapidly although easy repetitions are present. Voice usually well controlled.		
42	Speech melody. Blocking on initial syllables frequently interrupts rhythm. Rates of speech increased. Many responses in loud voice or yell.		Sing song strategy.
48	Sings phrases of songs; Knows of few simple rhymes. Speech melody (prosody). Vocal pitch controlled. Uses some adult patterns of rhythm. Repetition		

00056

Age in Months	Stage	Appropriate Equipment	Alternative
48 (cont'd.)	reduced, thus improving rhythm.		
54	Voice well modulated and usually keeps on intonational and rhythmic patterns of mother.		
72-84	Sentence melody unitative of adults in environment. Child experiements with rhythmic patterns. Facial expression accompanying speech changes with rhythm. More varied patterns of expression.		
84-96	Speech melody subtle rhythms and intonational contours present. Facial and hand gestures underscore.		

29000

Stress of sounds. Stress is the third major aspect of the English phonological system. It means that some syllables or words are emphasized more than others. In some of our words certain syllables are accented or stressed. Also, there are some cases when nouns and verbs are distinguished by a change of stress as in export. Also, we can vary the stress in a sentence to produce different meanings. The words that receive stress tend to be nouns, verbs, adjectives, and adverbs.

An additional element of the phonological system that lingusts refer to as paralanguage has to do with the meaning associated with voice quality. For example the whisper may convey the idea of secrecy whereas a loud shrill voice could be associated with excitement or anger.

00058

Phonology: Stress of Sounds

Age in months	Stage	Appropriate Equipment	Alternative
1-5	The average child's speech development can be predicted with a fair degree of accuracy, without too much concern for differences in environment up to this point.		
6	Coos to music. Vocalizes to mirror image.		
7	Crows and squeals. Babbling shows inflections. Similar to adult speech. Shouts for attention.		
8	Vocalizes recognition. Vocalizes in interjectionnal manner.		
42	Does not remember unstressed bits.		

69000

Semantics

Psycholinguistics has had little to say about how the child can be taught the enormous variety of meanings that he needs in order to understand literature. We know, however, that words can be thought of as names of concepts, therefore the study of the development of vocabulary is really the study of the formation and naming of concepts.

Semantics involves the levels given objects or events. These labels are decided by the language community and is accepted by convention so the community can communicate.

While children often make up their own words as symbols for their concepts, it is obvious that for concepts to be educationally adequate someone must apply the proper word as he needs it. Concept formation and language development are mutually interdependent processes, for virtually every word other than proper nouns represents a concept. Words also help in conceptualizing experiences. The "what's that" stage of language development signals a particularly active stage of early concept discovery. In discussing "intuitive" thought, however, Piaget emphasized that not before about age seven are concepts sufficiently firm and interrelated to permit logical reasoning in concrete situations.

As a child's fund of concepts learned from direct experiences increases, he can begin to develop and extend concepts from vicarious experiences, especially from stories, pictures and direct conversation. Television has considerable potential in this respect. Children may also pick out familiar words that they hear in various situations and inquire about their meaning. When concept learning starts with the term and preceeds with definition and illustrations it is learned inductively, more in the fashion of many later concepts met in school. The skill of teaching a concept in this fashion is in utilizing the child's concepts that are already well formed for him. Then help him construct mental images of representative members of the new class or concept.

Semantic Outcomes

To enhance the young child's concept development appropriate classification concepts are selected to emphasize. The learning facilitator prepares a physical environment that will elaborate the vocabulary she selects. Following are suggested concepts:

Properties of the concept.

Sight

a. Size - big, little, long, short, tall, wide, tiny, narrow
b. Shape - 2 & 3 dimension, round, square, cylinder, cube, sphere
c. Color - primary, secondary.
d. Condition - old, new shiney
e. Composition - wood, plastic, metal, knitted, cloth, etc.
f. Major parts
g. Function - what is it used for?

Touch - shape, texture, temperature, and weight

a. Texture -	hard	rough	dry	scratchy
	soft	smooth	gritty	prickly
	pliable	waxy	rubbery	slippery
	furry	mucky	glassy	mushy
	rigid	sticky	slick sandy	
	wet	gooey		

Taste - texture - sweet, sour (cooked, uncooked) delicious, crisp, tart, spicy, greasy, gooey, bitter.

00080

Smell - pleasant, unpleasant, odor, smell, spicy, sweet, pungent, strong, mild, scent.

Hear - what sound does it make? rattle, pop, screech, buzz, loud, soft, sharp, quiet, shrill, clap, bump, hiss, clear, low, sigh, muffled, ring.

Emotion and Feelings -

afraid	pleased	selfish
proud	hopeful	haughty
anxious	happy	peaceful
troubled	sad	poor
grateful	angry	annoyed
ashamed	confident	good
lonesome	wicked	joyful
faithful	wanted	upset
loved	tearful	bad
bashful		

Positional concepts. The teacher then emphasizes positional concepts that relate to the main concept.

Positional Concepts

in	over	slanted	slanting	out
on top	diagonal	through	beneath	next to
beside	high	away	there	low
between	under	left	on	right
around	north	behind	south	below
east	above	west	far	top
near	middle	close	before	flat
after	upright	between		

Opposites and contrasting conditions. The teacher will then select opposite and contrasting conditions relating to the main concept.

Opposite & Contrasting Conditions

same-different	short-long
left-right	over-under
hot-cold	rough-smooth
right-wrong	wide-narrow
stop-go	clean-dirty
soft-hard	fine-coarse
light-heavy	old-young
light-dark	in-out
wet-dry	up-down
big-small	behind-ahead
night-day	high-low
big-little	loud-quiet
on-off	

Quantification concepts. Quantification experiences are selected relating to the main concept.

Quantification

Part-whole relationships
Number
weight and mass
Volume
Length - Width - Breadth
Sequence
Value

00061

more than
less than
same as

Comparison concepts. The teacher may also use comparison experiences relating to the main concept.

Comparisons
How are they different?

big-bigger-biggest
tall-taller-tallest
little-less-least
more-most
noise-noisier-noisiest
soft-softer-softest
loud-louder-loudest

Time concepts. Time experiences may also be related to the main concept.

Time

1. Words that express time concepts.

time	hands	lunchtime
clock	day	numbers
o'clock	seconds	noon
minutes	morning	afternoon
hours	evening	early
face	night	late

2. Days of week
   Months
   Seasons
   specific time names — daily, weekend, week, today, first, second, etc.
3. Special Days and Holidays
   birthday
   weekend
4. Past - yesterday
5. Present - today
6. Future - tomorrow, next

Motion concepts. The teacher may also select motion experiences which are pertinent to the main concept.

Motion
How do things move?

Marching, running, walking, hopping, - "ed", and "ing" tell whether its happening or has happened.
"ly" action words - slowly, quickly, smoothly, quietly, gracefully, jerkily, lazily.

Associational concepts. Indirect associational experiences which are pertinent to the major concept may be introduced.

Association
(Related Concepts)

Can you think of any other related ideas to _____?
ex: concept: apples — introduce the book Johnny Appleseed
letters — introduce concept of the mailman

00062

Semantics

Age in months	Stage	Appropriate Equipment	Alternative
3	Sustains cooing 15-20 seconds.		
6	Babbling resembling one syllable utterances like ma, mu, da, or ci.		
8	More continuous repetitions become frequent; intonation patterns become distinct, utterances can signal emphasis and emotions.		
10	Vocalizations mixed with sound.		
12	Babbling; practices at random many phonetic elements of IPA; it is self-imitated. Mamm or dad emerging. Has 2 words besides mama and dada.		
15	May name a familiar object - like ball or cookie.		
18	20 words including some adjectives and adverbs. Says hello, bye-bye, thank you. Names pictures - referent category is broad and inclusive.		
21	Specifies need for food and drink, water, etc.		Don't respond until child makes verbalization.
22	Adds 100 new words to vocabulary.		
24-30	Vocabulary of 300-45- words. Naming of things, persons, actions, and situations greatly		Multi-sensory concepts centers.

69006

Age in months	Stage	Appropriate Equipment	Alternative
24-30 (cont'd.)	predominant. Adverbs, adjectives, prepositions are in the minority. Child refers to self by name. Pronouns "mine", "me", "you", and "I" coming into use in approximately that order. Pleasure in matching words with objects.		Developmental learning process (see strategies)
36	Egocentric speech previals. Dramatizes, combining words and actions for his own pleasure. Asks questions about persons, things, processes. Names two colors. Tells sex; full name. Verbalizes toilet needs. Vocabulary has mean number of words of 896.		
36-48	Knows street where he lives. Knows age and sex. Knows last name. Meaningful words dominate speech. Words become instruments for designating percepts, concepts, ideas and relationships. Counts three objects correctly. Content is largely egocentric. Vocabulary of nearly 1000 words. Average is 900. Suite action to word and word to action in his monologue. Prepositions such as "on", "behind", "under", "in front of". Refers to self as "I'' Non-present situations dealt with verbally. Generalizations common in talking. Greater growth of vocabulary within shorter		

00064

Age in months	Stage	Appropriate Equipment	Alternative
36-48 (cont'd)	period of time than any other period of semantic development.		
48	Counts 4 pennies correctly - number concepts barely goes beyond "one", "two", and "many". Can count beyond 4 by rote memory. Vocabulary of 1500 words. Ability to generalize and abstract are present. Verbal syncretism still dominates understanding but he is beginning to show interest in isolated word meaning. In general still deals with whole sentences without analysis of words. Uses many how and why questions in response to speech of others. Perception still is realistic, first person. Ideation, however, becoming less concrete: alludes to objects, persons, events not in immediate environment. Engages in collective monologues with other children but there is little cooperative thinking. Tells tales; talks much; threatens playmates. Mean number of words: 1540. Uses slang.		
54	Egocentric speech declining: uses more adaptive language (social communication. Verbal syncretism still dominates understanding. Employs extension of meaning in interpreting speech of others. Perceives differences in concrete events. Links past and		

00065

Age in months	Stage	Appropriate Equipment	Alternative
54 (cont'd.)	present events. Mean number of words is 1870. Vocabulary now reflects his linguistic culture; uses many colloquial expressions. Defines simple words. Tries to use new words, not always correctly.		
60	Names 4 colors. Counts 10 pennies correctly. Has vocabulary of 7072 words. Aggressiveness may appear in words as well as actions; he calls names and brags. Can tell his age. Defines in terms of use e.g. "a horse is to ride". Distinguishes left and right in self, but not in others. Engages in responsive discourse. Gives and receives information. Change from egocentric speech to rational reciprocity. Develops percepts of nuber, speed, time, space. Shows inner logic in recounting plots of children's plays (television and theatre). Names and describes objects in composite pictures. Names penny, nickel, dime. Employs some imaginative thinking, but is mainly realistic. Abstraction still is meagre. Categorizes concrete events on basis of likeness and difference. Mean number of words is 2072. Percentage increase in vocabulary of use slight. Comprehension of vocabulary increasing markedly. Defines simple words.		

Age in months	Stage	Appropriate Equipment	Alternative
66	Language is becoming symbolic. Significant gains in relating present and past events. Conversation is socialized in sense that listener is associated with speaker; little true collaboration of thought. Child still speaks chiefly of himself, his actions, and thoughts. Primitive argument develops: clashof unmotivated assertions. Advances in categorization and synthesis of percepts. Mean number of words is 2289.		
79	Comprehension of morphemic sequences develops sharply. Anticipates closure in speech of others. Perception and inner language make great gains; asks for explanations, motives of action, etc. Understands roughly difference between time intervals. Understands seasons of year. Generally distinguishes left from right in himself. Attempts to verbalize casual relationship. Counts three objects without error. Comprehends meaning of 4000 words; uses (mean number of words) 2562 (7 years).		
92	Egocentric speech has gone underground, and inner language shows marked development. True communication develops. Ideas shared; speech reflects understanding of		

29000

Age in months	Stage	Appropriate Equipment	Alternative
92 (cont'd.)	casual or logical relations. Comprehension of words races far ahead of docabulary of use. Understands 6000-8000 words. Vocabulary of use: 2562 to 2818 (7-8 years).		

Syntax

It is our knowledge of the rules of conbination, the syntax of the language, that governs how we construct and understand an infinite number of sentences from a finite vocabulary. Syntax gives language its power.

A syntactic component may be thought of as a device that generates a set consisting or representations of all the well-formed sentences of a language. Since this set is clearly infinite it cannot, by definition, be represented by a list. Hence, the form of the grammar is a finite set of rules, at least some of which must be recursive, i.e, capable of indefinite reapplication.

The conceptually simplest device for characterizing an infinite set (i.e., simplest realization of a set of recursive rules) is a finite state source, and the sets generated by such sources are called finite state languages. A finite state grammar views sentences as sequences of items chosen from an available inventory - the vocabulary of the language so that each choice after the initial one is conditioned by one or more of the preceding sources (Saporta, 1967).

Grammar

A generative grammar is a system of rules that derives an infinite set of well-formed sentences and assigns them correct structural descriptions.

The phrase structure level of language represents the adult's sense of hierarchical grouping in a sentence ~~a~~ the feeling that a sentence breaks into natural major constituents which in turn break into natural smaller constituents. It also represents such basic sentence relations from traditional grammar as subject of a sentence, predicate of a sentence, object of a verb, etc. The phrase structure includes everything essential for a complete semantic interpretation, but it does not order elements as they are ordered in the ultimate surface structure. The phrase level represents the deep structure of language.

Next in the sequence of syntax development is the transformational level. The base structure of a grammar is combined in various strings to produce the transformational level or surface level. Transformational rules map strings (or phrases) into new structured strings that are sentence types. Transformations can delete, substitute, and add elements as phrase structure rules cannot.

A transformational rule describes the structure of the kind of string to which it is applicable; there will generally be an indefinite number of strings that satisfy that structural description. In an actual transformation it is a particular string that is transformed.

The final stage of syntax development is the use of morphemes. Morphemes are the smallest unit of meaning. They can occur alone as a word or not alone as ing, un, pre, which are called "bound". A word may be composed of one or more morphemes; "cats" consists of two morphemes - cat and the plural suffix. Morphemes are divided into classes, and sentences are composed of certain ordered sequences of classes. Morpheme classes are comparable to traditional parts of speech but are identified in terms of substitutions in linguistic contexts rather than in terms of meaning. Thus, the morphemes that fit in the sentence "The _____ was good", constitute a class. Morpheme classes can be divided into two groups, lexical and functional classes. Lexical classes are few in number, but have many numbers. In English these include nouns, verbs, adjectives, and certain adverbs. Function classes

00069

constitute a larger number of small, closed classes. In English morphemes include conjunctions, prepositions, auxiliaries, and suffixes such as the plural and past tense morphemes (Ervin & Miller, 19). Rules on this level really belong to the phonological component.

In order to learn grammar, a child must segment the speech he/she hears into morphemes because morphemes are the ultimate units of grammatical rules. There are small sound units called phonemes and longer sound combinations which carry semantic meanings but these cannot be formulated in terms of phonemes - they are morphemes.

The child hears, "my book," "your bike", "my birthday", etc. If he/she erroneously segmented these phrases into morphemes, they may sound like "myb/ook", "yourb/book", "myb/irthday."

Morpheme segmentation errors such as myb/ook, or yourb/ook are uncommon. The child seems to have a highly effective procedure for developing morpheme segmentation.

Syntax Outcomes

To develop the child's ability to express himself/herself using the identified grammatical patterns of standard English. Developmentally the beginning of syntax development are the phrase components of grammatical structures: 2-word noun phrase; 2-word designative phrase; 2-word predictive phrase; 2-word verb phrase; 3-word verb phrase; 3-word noun phrase; noun phrases incorporated into constructions; designative construction; predicative constructive; verb phrase construction; designative sentence; predicative sentence; actor-action sentence.

Simple Transformations

a. Passive	He was tied up by the man.
b. Negation	I am not.
c. Question	Is he sleeping?
d. Contraction	He'll choke.
e. Inversion	Now I have kittens.
f. Relative question	What is that?
g. Imperative	Don't use my brushes.
h. Pronomicalization	There isn't any more.
i. Separation	He took it off.
j. Auxiliary verb	
1. be	He is not going to the movies.
2. have	I've already been there.
3. do	
k. Got	I've got a book
l. Do	I did read the book.
m. Possessive	I'm writing Daddy's name.
n. Reflective	I cut myself.
(Generalized Transformations: These are derived from 2 kernel sentences)	
o. Conjunction	They will be over there and momma will be over there.
p. Conjunction delection	I see lipstick and a comb.
q. Conditional - if	I'll give it to you if you need it.
r. So	He saw him so he hit him.
s. Causal	He won't eat the grass because they will cry.
t. Pronoun in conjunction	Blacky saw Tippy and he was mad.
u. Adjective	I have a pink dog.
v. Relative clause	I don't know what he's doing.
w. Complement	

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1.	infinitival	I want to play.
2.	participial	I like singing.
x.	Interaction	You have to clean clothes to make them clean.
y.	Nominalization	She does the shopping and cooking and baking.
z.	Nominal compount	The baby carriage is here.

Fluency. Fluency is the ease with which a child responds or expresses himself/herself. Developmental sequence indicators for fluency are as follows:

The child does not respond until encouraged.
The child responds with one or more spontaneous remarks but cannot continue.
The child responds with one or more spontaneous remarks and continues with another remark or two when requested.
The child responds freely, continues when requested and is highly productive.
The child's responses are at a productive level, but he/she includes the teacher in a conversational manner.

Fluency development is enhanced by using the developmental process as this process is based upon child responses.

Fluency Outcomes

1. To develop a precise language of reference so that the child will be able to specify the characteristics of objects precisely and accurately without needing visual props.
2. To develop the child's ability to ask questions as a means of seeking and gaining information.
3. To develop the child's ability to verbalize eagerly and with ease.

00071

Syntax: Grammar

Age in Months	Stage	Appropriate Equipment	Alternatives
18	Begins to combine words.	Books with large pictures.	Reinforce child's verbilizations.
21	Joins 2 words in speech frequently.		Extend child's verbalizations.
22	Uses 2 concepts in one sentence - "Daddy gone".		Elaborate child's verbilizations.
24-30	In same sentence expresses intention and action: "Peter slide down." Does not relate experiences in well-defined past tense. Indulges in soliloquy and dramatic play in order to hatch his words, phrases, and syntax. Discovers use of the "question" and asks names of things.		
36	Generative grammar develops (development by his own rules). Experiments with many syntactic forms. Two word-phrases most frequent form: "That boy (is) naughty"; "Mommy car stop" (Mommy's car stopped; wouldn't run). Designative constructions coming into use; phrases expanded into subject-predicate sentence. (What that thing go round?) Mean length of response: 3.4 words.		
42	Grammatical categories. Speech is made up of: nouns-17%; verbs-22.8%; adjectives-6.5%; adverbs-10.1%; pronouns-19.8%; conjunc-		

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Age in Months	Stage	Appropriate Equipment	Alternatives
42 (cont'd.)	tions-2.2%; prepositions-6.7%; interjections-1.7%; articles-6.9%; and unclassified-6.3%. Uses new adjectives: strong, new, different. Uses new adverbs: maybe, too. Uses auxiliaries: might, could. Gains skill in permutations: makes questions from declarative statements. Mean length of response: 4.3 words.		
48	Frequent questions - many times ones to which he already knows the answers. Uses language easily to tell a story or relay ideas, feelings, desires, problems. Longer sentences are compound and complex in structure. Tells a story. Speaks of imaginary conditions: "Suppose that", "I hope". Can tell a lengthy story mixing fact and fiction. Can carry on lengthy conversation with adults and children, though he may make grammatical errors and misuse words. Questions at a peak, not always interested in explanation but rather how answers fit own thought. Skill increasing in transformations (modification in sentence which transforms kernel). Sentence structure advances rapidly. Beginning to use complex and compound sentences, 6-8 words in length. Mean sentences length: 4.2 words.		

Age in months	Stage	Appropriate Equipment	Alternatives
48 (cont'd.)	Speech is made up of: nouns-16.3%; verbs-23.1%; adjectives-6.7%; adverbs-10.4%; pronouns-20.3%; conjunctions-2.8%; prepositions-7.5%; interjections-1.3%; articles-7.5%; and unclassified-4.1%.		See language experience strategy.
48-60	Knows rules for forming the plural and possessive for nouns. Knows rules for past tense. Knows rules for third person singular for verbs.		
54	Use of complex and compound sentences increasing. Reverses syllabic and word order occasionally in sentence. Elaborates sentence by use of conjunction; makes spontaneous corrections in grammar. Mean length of response: 4.7 words.		
60	Language essentially complete in structure and form. Answers questions more succinctly and to the point. Uses all types of sentences including complex ones with hypothetical and conditional clauses. Uses conjunctions more freely, but generally frequency of parts of speech same as at 4 years. Grammar reasonably accurate; makes many spontaneous corrections. Sentence structure expanding rapidly in accuracy and complexity. Embedding more common. Develops relative clause. Mean length of re-		

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Age in Months	Stage	Appropriate Equipment	Alternatives
60 (cont'd.)	sponse: 4.8 words.		
66	Permutations. Great gains in sentence making of all types. Uses all basic structures. Mean length of response: 4.9 words. Makes some errors in grammar but corrects them spontaneously.		
78-94	Speech is made up of: nouns-17.1%; verbs-25%; adjectives-7.6%; adverbs-10%; pronouns-19.2%; conjunctions-2.6%; prepositions-7.6%; interjections-1%; articles 8.3%; and unclassified 1.6%. Sentence length and complexity develops sharply; has command of every form of sentence structure. Mean sentence length: 6.5 words.		
94-106	Chief grammatical errors now are common to his cultural environment. Mean length of response: 7.2 words		

Reading Readiness

According to Betts (1946) reading is a language process rather than a subject. In a psychological sense it is a thinking process. It is also a social process which relates the reader to his environment and conditions that relationship. Psycho-physiological factors, such as seeing and hearing, also are part of the process. Only if reading is thought of as a mere word pronunciation process can many of the facets of language development be excluded.

Reading is a complex combination of many processes including perception and recognition; comprehension of words, phrases, sentences, and larger units of meaning and modification of these meanings by prior understandings and experiences (Sheldon & Sheldon, 1957). A primary explanation of its use is to get meaning from writing and printing (Duker & Nally, 1956). As a reader observes printed or written symbols, he/she must be able to recognize the words or phrases he/she sees, understand the use of these words and phrases in the sentences while reading, and complete the act of reading by interpreting and reacting to what he/she has read (Sheldon & Sheldon, 1957).

Reading should not be an isolated academic exercise, but rather a purposeful activity which has meaning and demands understanding. In developing the reading skill, a child needs to be sensitive to what is going on around him/her. Then he/she can focus on the objects in the environment which give meaning to the printed word. In school the child will see teachers and other children reading books; he/she may see labels on numerous objects; he/she can find books in the hallways, at interest centers, in the library or music corner, with filmstrips.

Children need time to explore for themselves. Children will need help, but the facilitator must be careful to provide the right help at the right time. Most children start to read between the ages of five and eight years. The mental age of the child is very important to success in reading because the child must have reached a certain social maturity as well as a choronological maturity to get meaning from reading. Included in this maturity will be a certain amount of independence, responsibility for self, broad interests, stimulating and satisfying relationships with others on individual and group bases, and ability to listen (Betts, 1946).

Reading readiness means the maturation of all of the mental, physical, and emotional factors involved in the reading process. Regardless of the chronological age of the child, the point at which the child's growth and development have brought about proper maturation of these factors should be the point at which the reading process begins (Betts, 1946).

Basic to the development of readiness for reading is mastery of many skills mentioned in other areas of development. Reading is affected by past motor, cognitive, social, and psychological experiences and activities. It requires that a child have an awareness of the structure of his language, an awareness that must be more explicit than is ever demanded in the ordinary course of listening and responding to speech (Liberman, 1973). According to Stauffer (1969), reading readiness is "a state of knowledge". Children must reach a certain maturity in all areas of development - social, emotional, mental, physical, language, visual, and auditory - before they are ready to read. Included in the following ontogeny are some of the most important skills from the other modules - auditory, phonetic, semantic, syntax, motor and social as well as reading readiness.

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Reading Readiness Outcomes

Reading skills include all the specific outcomes identified in auditory discrimination, phonetics, semantics, and syntax. These all provide the base for the reading process. Additional skills that are not specifically developed in the other areas are as follows:

To develop the concept that verbal language has picture symbols.
To develop a desire for books - literacy appreciation.
To be able to put a series of pictures or events in proper sequence.
To be able to retell a story in proper sequence.
To develop a sight word vocabulary.

Related Outcomes from Other Areas of Development

Motor

Visual Perceptual

To develop the ability to recognize and integrate visual stimuli
To develop reorganization of visual patterns
To develop ability to see perceptual part-whole relationships
To develop ability to explore visual symbols and scan in left to right sequence
To develop the ability to make comparisons over distance

Visual-Fine Motor

To develop writing, drawing, copying, and tracing skills

Phonetic

To be able to make sounds like those made by an adult model producing the 44 phonemes
To learn the names and sounds of the letters of the alphabet

Auditory Discrimination

To distinguish sounds that are the same and not the same
To distinguish the sounds of the various phonemes
To identify the sounds of the various phonemes.

Semantics

To associate meaning with spoken words
To obtain meaning from sentence structure

Syntax

To develop the child's ability to express himself using the identified grammatical patterns of standard English
To develop a precise language or reference so that a child can identify the characteristics of objects not in the immediate environment

Social

To be able to interact well with teacher and peers
To be able to play alone for short period with increasing attention span for activity
To be able to interact with peers in dramatic play and small groups

Cognitive

To be able to attend when read to
To lengthen attention span
To be able to conserve - temporal relations

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Reading Readiness

Age in Months	Stage	Reading Sequence	Alternatives
18-24	Realizes that pictures aren't real.		Display photographs with real objects.
24-30	Begins to want books.		Visit library-Bring books into home or school. Read books or let children tell stories of the pictures.
30-36	Follows simple stories.		Place books in accessable place-have children select a book to have read.
36-42	Selects stories for listening.		
42-48	Develops concept that reading is talk written down. Puts series of pictures (3-5) in proper sequence.		Label child's pictures.
48-54	Retells story in proper sequence. Scans in left to right sequence.	Will explore label and interact with concrete stimulus (Basket of Fruit). Will dictate an account of the stimulus experience. Attends to graphic rendering and choral reading with teacher.	See Language Experience Strategy
54-60	Pretends to read. Participates in dramatic reproduction of story.	Runs ahead or continues oral reading as teacher's voice is withdrawn. Can identify words at first	

Age in Months	Stage	Reading Sequence	Alternatives
54-60 (cont'd.)		and last position in graphic string. Identifies words in middle of string. Identifies words written in isolation next to dictated account.	
60-72	Identifies words in isolation after choral reading.	Identifies words in isolation after choral reading. Identifies word after 24 hour period from oral reading. In other words, child learns letters (and incidentially can name them) learns left to right progression and can match spoken with written words. Also, during this period child can attend to likenesses and differences in initial and final letter sounds in spoken words. Begins to acquire more and more words from successive dictated accounts - typical "J" curve. Explores words for patterns. Reads simple stories and accounts written by others. Writes his own communications (this can probably begin about level 8).	

62608

SOCIAL DEVELOPMENT

Social development means the acquisition of the ability to behave in accordance with the social expectations of a given society. In recent years there has been an increasing emphasis on the social and emotional growth of the child. Unfortunately progress in the area of feelings and human relationships has not kept pace with man's technological success. Researchers and educators now are only beginning to understand the processes of social development and their importance to all other areas of human achievement. According to Hurlock (1964) social development means the acquisition of the ability to behave in accordance with social expectations. Three distinct yet interrelated processes which are involved in socialization are: (1) effective performance behavior; (2) the playing of approved social roles; and (3) the development of feelings and attitudes. A socialized person is a "friendly" person who likes people and social activities. "In short, becoming socialized means that the child behaves in such a way that he will fit into the social group with which he wishes to be identified and will be accepted by the group as a member" (Hurlock, 1964).

Our research indicates that the following general conditions are necessary for a healthy social development of the young child.

1. Warm parent-child and teacher-child relationships.
2. A democratic versus an authoritarian family structure.
3. Many opportunities for success in relationships with peers.
4. Many opportunities for practice and success in social, physical and intellectual activities.
5. Increasing responsibility for tasks and decision making commensurate with age and ability level.
6. A variety of social contacts.
7. Adult social approval for successful completion of tasks.
8. Models who display healthy social attitudes.
9. Parents and teachers who are both: (1) interested and active listeners, and (2) interested in talking with the child about things, events, places, problems, and people in the world we live in.

The area of social development has been subdivided into three subareas: self-help skills, those abilities needed to physically care for oneself, individuation, perceptual and cognitive understanding of feelings, attitudes and beliefs one has of himself/herself, and behavioral adjustment to society, the interacting with others.

The social development of the young child is interrelated to the other major developmental areas identified for the Child Development Center curriculum. For example, in the area of self-help skills many perceptual motor tasks are found and cognitive stages of development are highly related to the moral development of the young child.

All are necessary components of the social child. They are of course interrelated but are separated in order to better understand the areas of social development and their respective developmental sequences.

The developmental outcomes represent those that are most definable at this time and are only a portion of those that make up the total social development of the child.

Self Help Skills. Although relatively few in number, those skills which inable a child to care for himself/herself are essential for his/her total social development. These abilities are commonly known as self help skills.

At birth the child is dependent upon those adults within his/her

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environment for his/her total care. These adults are responsible for feeding, cleaning and dressing the child. As the child develops he gradually assumes the responsibility for his own care.

Following are the outogenies in eating, clothing and personal cleanliness.

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Self Help Skills: Eating

Age in months	Stage	Appropriate Equipment	Alternatives
6-7	Chews solid foods well; begins to drink from cup; prefers bottle; anticipates spoon feeding, sucks from spoon.		
9-10	Holds own bottle; pretends to drink from cup; finger feeds spilled bits of food.		
12	Finger feeds from tray; drinks small amount from cup; holds spoon and brushes across tray.		
18	Uses teaspoon (can hold awkwardly at 15 months); feeds self in part - spills.		
24	Feeds self; inhibits overturning of spoon; holds cup or glass in one hand; drinks from glass.		
36	Put proper amount of food in mouth; chews properly; uses soup spoon; uses fork; eats sandwich properly; eats with minimum spills.		
42	Uses napkin; can combine talking and eating.		
48	May help plan and prepare meals.		Cooking activity.
54	Uses paper straw appropriately without damaging (Quick, 1973)		

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Self Help Skills: Eating

Age in months	Stage	Appropriate Equipment	Alternatives
60	Spreads with knife, partial success (Quick, 1973).		

Self Help Skills: Clothing

Age in months	Stage	Appropriate Equipment	Alternatives
3	Pulls at clothing with hands (Quick, 1973)		
12	Cooperates with dressing-does not resist (Quick, 1973)		
15	Pulls off socks, but not necessarily shoes (Quick, 1973)		
18	Unzip large zipper. Take off leggings, slacks, mittens, boots, hat, or cap. Puts on shoes. Pulls off socks but not necessarily shoes (Quick, 1973)	Montessori zipping frame.	Homemade dressing frames.
24	Takes off pants. Removes coat or dress if unbuttoning is not required (Quick, 1973)		
36	Unbuttons accessible buttons; undresses except for back fastenings; puts on pants, socks, shoes; cannot distinguish front from back. Can take off shoes if untying not required. Put on shoes if tying not required.	Montessori frames; buttoning (Large and small).	Homemade dressing frames.
42	Fastens buttons front and side; fastens snaps; fastens belt; buckles shoes; fastens hat or cap; takes	Montessori frames: buttoning (Large and small); zipper; snaps; hooks and eye; and safety pin.	Homemade dressing frames.

Self Help Skills: Clothing

Age in months	Stage	Appropriate Equipment	Alternatives
42 (cont'd.)	off and puts on coat; dresses with some assistance - clothes need to be laid out (completes dressing with exception of tying bows and buttoning back buttons.		
48	Distinguishes front from back; can hand up clothes. (Quick, 1973)		
50	Dresses self completely.	"Dress up clothes".	"Dress up clothes"
60	Attempts at tying shoes. (Quick, 1973)		
72	Laces and ties shoe laces.	Montessori tying frame.	
84	Knows own clothing.		
96	Can choose own clothes; takes care of clothing; Can tie and keep shoe laces tied without being reminded.		

Self Help Skills: Personal Cleanliness

Age in months	Stage	Appropriate Equipment	Alternatives
18	Understands the meaning of clean and dirty; toilet habits regulated in daytime; recognizes need to go to bathroom and can verbalize need.		
30-36	Recognizes need for washing; goes to the bathroom alone; uses toilet paper; flushes toilet.		
40	Washes hands; dries hands; washes face; knows how to blow nose; properly adjust clothes before and after using toilet.		
48	Cleans teeth; knows how to wipe nose; needs minimum directions when bathing.		
54	Washes face well (Quick, 1973)		
72	Combs hair (boys - if short) (girls later if long hair)		
96	Cares for fingernails.		

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Individuation

Individuation involves the understanding of the emerging self and the process of identification. Individuation refers to self development and includes all the perceptions, cognitions, feelings, attitudes and beliefs tnat the individual has about himself. Children are not born with the concept of self or individuality. At birth there is no differentiation between "me" and "not me". This concept is formed as a result of direct interaction with the environment and with others. The child's self concept is actually formed as a result of the quality of his caretaking. As he gets older, he moves away from the family setting and the influence of teachers, peers, and other adults become increasingly more important.

Individuation or self development has been defined in various ways. This curriculum identifies six aspects of the emerging self which include body image, self image, self concept, self esteem, ideal self, and moral self.

Body image concerns the psychomotor aspects of self development including awareness of physical body in space, awareness of body as a separate person, and awareness of one's body in relation to other objects within the environment. Self concept formation begins with development of body image. Children with inadequate body images often have distorted perceptions of their physical capacilities. Body image can be trained by providing many opportunities for the child to use his body in interaction with the environment.

Self image refers to an individual's perception of self in terms of specific concrete, socially important attributes such as body size, strength, and build which influence his attitude toward self. Self image includes awareness of self as object and as subject, ability to objectively describe the physical self, and ability to deal effectively with feedback from others. Self image differs from body image in that self image involves perceptions of the person as seen in the mirror while body image involves how the person perceives his body as an inner physical or kinesthetic experience.

Self concept is the cognitive aspect of viewing self and refers to an individual's awareness of his own characteristics and atrributes, and the ways in which he is both like and unlike others. Self concept involves awareness of self as a separate, individual person, awareness of one's identity in a social world, and self acceptance.

Self esteem is the persons' evaluation of self or how he feels about himself. It includes awareness of feelings of personal worth, belief in one's own abilities and competencies, ability to solve problems, ability- to express one's own preferences, ability to accept minor failures, and development of responsibility and independence. Self esteem influences every aspect of self development including academic achievement.

Ideal self is the "person I'd like to be" and represents the self which the individual aspires to become. It is very similar to Freud's ego ideal and involves the ability to describe and set goals for the person the child wishes to become. High and low real-ideal discrepancies may lead to poor adjustment. In other words, it is important to set goals for oneself as long as they are reasonable and not too easily or difficultly obtained.

Social self moral is concerned with the self as it becomes a moral being. Moral development is highly related to cognitive development and includes: Knowing the basis for decisions in value judgments, social attitudes, ability to interact with others, interest in the

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welfare of others, sense of justice, cooperation, tolerance, lack of prejudices, and ability to see the value in mistakes.

It is not surprising if these areas seem highly similar and interrelated. Theorists and investigators have confused the issues of self development by failing to adequately define it. On the other hand, the aspects of self development are so interrelated that it is difficult to discuss self concept without also attending to self esteem. It must be realized that the total self is the sum of its individual parts, however, to better understand the above aspects of self development individuation has been analyzed as separate entities.

Outcomes for Individuation

Body Image (Psychomotor Outcomes)
Awareness of physical body in space.
Awareness of body as a separate person.
Awareness of one's body in relation to other objects within the environment.

Self Image (Perceptual Outcomes)
Awareness of self as object.
Awareness of self as subject.
Ability to objectively describe physical self (body size, strength, body build, etc.).
Ability to deal effectively with feedback from others about self (mirror image).

Self Concept (Cognitive Outcomes)
Awareness of self as a separate, individual person.
Awareness of own identity in a social world;
a. self as object;
b. self as process.
Acceptance of self.

Self Esteem (Affective Outcomes)
Awareness of feelings of personal worth.
Belief in own abilities and competencies (self confident).
Ability to solve problems.
Ability to express own preferences.
Ability to accept minor failures.
Development of responsibility and independence.

Ideal Self
Awareness of ideal self - "the me I'd like to be".
Ability to describe ideal self.
Ability to set goals for what child wishes to become.

Social Self (Moral Outcomes)
Ability to interact with others.
Social attitudes - friendliness to peers.
Interest in welfare of others.
Sense of justice, cooperation, tolerance, honesty, lack of prejudices.
Ability to see value of mistakes.
Ability to see basis for [illegible] in value judgments.
Ability to make value [illegible].
Ability to dealy gratification.

Individuation: Body Image

Age in months	Stage	Appropriate Equipment	Appropriate Strategies
1	Visual tracking of moving & stable objects.	Rattle, car keys.	Shake rattle from right to left & then from left to right as child focuses on object.
4	Reaches out to grasp.	Mobile on crib.	
6	Discovers and manipulates hands, feet, genitals.		
8	Strong bilateral use of hands in approach, grasp, and manipulation, and in simultaneous holding of two objects.	Rattle, small wooden toy, pull toy.	
10	Sits up alone, leans trunk and arms forward, mirror play, imitation of gestures and sounds.	Unbreakable mirror.	
18	Walks and runs, pushes and pulls.	Pull toy, wheel toy.	
21	Climbs, watches movements of others.	Steps, stairway, loft ladder, slide, jungle gym, etc.	Imitation of movement.
24	Verbally identifies some of basic body parts, regards own movement during scribbling.	Crayons, pencils, markers, etc.	Verbally reinforce child's labeling.
30	Distinguishes between two sides of body.	People puzzles	Angels in the snow.

Individuation: Body Images

Age in months	Stage	Appropriate Equipment	Appropriate Strategies
48	Simultaneous, spontaneous gestures, as well as simultaneous movement of fingers in manipulation.		
60	Awareness that left and right limbs are found on either side of body.		Creative dancing or movement.
72	Much activity & movements, stunting & physical skills, makes left and right discriminations about body.		Creative dancing or movement. Swimming activities.
96	Identifies another person's left and right hands and names most observable parts of his own body.	Full length mirror.	Game-Simon says.

Individuation: Self Concept

Age in Months	Stage	Appropriate Equipment	Appropriate Strategies
1	Reacts to social overtures by a reduction of general activity.		Verbalization, singing shake rattle, etc.
1-4	Primary circular reactions		
2	Facial animation, stops crying at sight of mother, tries to respond to adult vocalization.		
3	Vocalizes and smiles in social response, reaches out to grasp objects in environment.		Reinforce grasping attempts with verbalizations & smiles.
4	Initiates social smile and displays recognition signs on the sight of mother, begins to laugh in response to adult activity, regards own hand.		
4-6	Responds to mirror image.	Unbreakable mirror	
5-6	Awareness and exploration of hands and feet.		
6-8	Withdraws from strangers, display of fear of strangers indicating differentiation of familiar and unfamiliar.		Expose to adults other than immediate family.
6-9	Holds out arms to be picked up, develops strong attachment to mother.		
8-9	Develops person permanence.		Peek-a-boo games.
9	Shrieks to hear own voice and begins to see cause-effect re-		Peek-a-boo games and other hide and

Age in Months	Stage	Appropriate Equipment	Appropriate Strategies
9 (cont'd.)	lationships, beginning of autonomy.		find games with highly desirable objects.
9-10	Begins to enjoy games like peek-a-boo, development of object permanence.		
9-12	Recognizes physical separateness from mother, has differentiated self from outside world.		
10	Recognizes reflection in mirror; makes detours and solves easy problems (how to remove bead from jar).	Unbreakable mirror, toys that can be put together and taken apart.	
10-12	Responds to own name.		
12	Plays pat-a-cake and nursery games; explores adult's facial features and compares to own; waves bye-bye; has resolved trust vs. mistrust conflict.	Mirror	
13-18	Points to parts of own body and clothing when named.	Rag doll	
18	Primarily egocentric; some social relations with adults. Defends and strengthens sense of self by opposing others (beginning of negativism; development of autonomy).		Provide child with acceptable alternative choices to promote independency.
18-36	Resolution of autonomy vs. shame and doubt conflict; solitary	Dress up props	Imitation of movement.

Individuation: Self Concept

Age in Months	Stage	Appropriate Equipment	Appropriate Strategies
18-36 (cont'd.)	play; parallel play; beginning of dramatic and role play; sense pleasure play; beginning of skill play.		
19-24	Refers spontaneously to his own name and to names of other children; uses possessive pronoun for people and things; beginning of feelings of sympathy for others		Take photographs of children & display.
21	Deepening awareness of adults; tends to treat other children as though they were objects.		Consistency in behavior of caretaker
24	Occupation with own individual activities; consolidating sense of self by obtaining and hoarding possessions; beginning of bowel and bladder control thus beginning of independence; global self concept begins to emerge; calls self by name.		
24-48	Beginning of associative play; period of possessiveness indicating step toward identity & articulation.	Housekeeping center.	Dress up props.
25-30	Refers to self as "I".		
30	Involvement in more interpersonal relations; differentiation of self as knower of self from self as thing known.		
30-36	Knows his name & where he lives.		

Individuation: Self Concept

Age in Months	Stage	Appropriate Equipment	Appropriate Strategies
36	Awareness of physical sexual self; awareness of physical differences between sexes; taken pride in things made; shows affection to peers; beginning of feelings of competence.	Paints, easel, paper.	Take photographs of children & display.
36-48	Engages in collective monologues.		
36-72	Awareness of body becomes stable and well defined; resolution of initiative vs. guilt conflict.		
48	Fabricates imaginary companions whom (usually) he can control completely; strong responses to other children; excessive boasting & bragging about self, abilities, relatives, possessions; considerable attempts at verbal domination of others; beginning of peer and teacher attachments.	Dress up props	
48-60	Moral realism; makes moral judgements on basis of material damage done; ability to delay gratification; ability to name all major external parts of body.		Trace child's body on large newsprint.
48-68	Beginning of cooperative play; rule making and following.		Use positive & consistent discipline.
48-72	Knowledge of sensory functions eyes are for seeing.		

Individuation: Self Esteem

Age in Months	Stage	Appropriate Equipment	Alternative
3	Vocalizes and smiles in social response, reaches out to grasp objects in environment.		
4	Begins to laugh in response to adult activities, observes own feet and hands.		
6-9	Development of strong attachment to mother.		
9	Shrieks to hear own voice and begins to see cause-effect relationships; beginning of autonomy.		
10	Makes detours and solves easy problems.		
10-12	Responds to own name; recognizes separatensss from mother & outside world.		
18	Defends & strengthens sense of self by opposing others (beginning of negativism; development of autonomy).		
24	Consolidating sense of self by obtaining and hoarding possessions, beginning of bowel and bladder control, thus more independence.		
18-24	Skill play.	Puzzles	
36	Takes pride in things made, begin feelings of competence.	Easel painting,	Playdough.
48	Excessive boasting and bragging about self, physical skills and stunting, beginning of peer and teacher attachment.		Provide adequate adult attention for acceptable behavior.

Behavioral Adjustment to Society: Appropriate Reality Orientation and Constructive Use of Fantasy

Age in months	Stage	Appropriate Equipment	Alternative
0-3	Quiets when picked up; responds to different sounds and voices, e.g., stops crying with familiar voice or sound is heard; follow people with eyes.		
7-9	Marked increase of familiar people recognized.		
10-12	Responds to question: "Where is?" for some persons; apprehensive or reserved in the presence of strangers.		
19-24	Likes to observe adults at work; imitates adult activities, e.g., care of animals, plants.		
25-30	Uses labels correctly for relatives, e.g., brother, sister, mother, aunt, etc.		
31-36	Recognizes different workmen, e.g., milkman, mailman, policeman.	Mail truck.	

Behavioral Adjustment to Society: Gratification of Goal Directed Activities

Age in months	Stage	Appropriate Equipment	Alternative
7-9	Waves bye-bye; cooperates with dressing manouvers; follows directions, i.e., lie down, come here, give me the spoon, etc.		
10-12	Responds to verbal command.		
13-18	Obeys simple commands; puts toys back in place after playing with them; says or gestures please when he wants something and thank you when he gets something.		
19-24	Begins to make judgments of fair and unfair; knows simple table manners.		
25-30	Reacts with pride to praise, tries to please adults; makes evaluation comments on the misconduct of others; makes commonly expected aesthetic judgments.		
31-36	Behaves age appropriate, e.g., sits still while in transport, responds to questions.		

Behavioral Adjustment to Society: Initiative and Spontaneity in Relationships

Age in months	Stage	Appropriate Equipment	Alternative
0-3	Communicates his needs through crying; learns to cry to get attention; responds to someone bending over to pick him up.		
4-6	Smiles when someone approaches.		
7-9	Initiates contact by stretching arms, calling, tagging.		
10-13	Repeats performance laughed at; tries to get adults to play with him.		
13-18	Runs towards familiar person.		
25-30	Confides needs and worries to familiar adult.		
31-36.	Initiates nurturant and playful behavior toward animals and small children.		

Behavioral Adjustment to Society: Appropriate Enduring Relationships with People (Adults)

Age in months	Stage	Appropriate Equipment	Alternative
0-3	Responds to familiar face or voice; stops crying with familiar voice; smiles at people; reacts to separation from familiar adult.		
7-9	Shows bashfulness or slight fear of strangers; reacts differently to familiar and strange people; dependency on mother or special caregiver.		
10-11	Focuses on mother or his caregiver as one person he will allow to care for him; fear of strangers.		
31-36	Develops relationship of trust with more than one adult.		

PERCEPTUAL MOTOR DEVELOPMENT

In the area of perceptual motor development there are basically three categories of abilities that are relevant to the young child's growth. The first two categories of physical and perceptual abilities include abilities that can be found necessary in several areas of perceptual motor development. The child needs different combinations of perceptual and physical abilities to develop certain perceptual motor abilities. The third category includes the major perceptual motor developmental outcomes.

The first category of perceptual abilities includes those motor abilities affected by the child's perception. Specifically they are visual acuity, visual attending, visual memory, figure ground perception, perception of constancy, perceptual discrimination, depth perception, movement perception, body awareness laterality, verticality, and directionality.

The second category includes the physical abilities of balance, flexibility, agility, strength, coordination and endurance.

The actual perceptual motor skills make up the last group category. These are the fine motor skills of finger and manual dexterity; the visual-fine skills of coordination of eye-hand movements, precision of eye-hand movements and steadiness of these movements; the locomotor even and uneven skills, nonlocomotor abilities, and finally the production and reception of propulsion.

VISUAL PERCEPTUAL ABILITIES

Perception is how the individual gets information from his surroundings. Visual perception is a process of attaching meaning or order to incoming visual stimuli. The ability to register and process the information in the stimulus changes with age. The child develops the ability to recognize and integrate visual stimuli in the brain and to reconstitute this into the experience of surroundings objects according to Gibson (1969). This involves abstraction of differential properties of stimuli, filtering out of irrelevant variables of stimulation, and selective attention of the kind described as exploratory activity of the sense organs. Children perceive the environment in a certain way and generally in accord with a perceptual pattern. Perception is active; it focuses on selected stimuli and rejects the rest. Following are three kinds of developmental perceptual learning that occur:

1. Preference for various colors, shapes, textures and illuminations shift.
2. Detection of distinctive features - or the detection of differences, objects, pictures, colors, textures, and positions.
3. Development of constant error - the shift in slight underestimation to a greater overestimation of size at a distance.

The child's visual perception is well developed at birth, and it proceeds rapidly in its further development. According to Ling (1942) the human infant can sustain visual fixation on a stationary target within a few hours after birth, and within a few weeks can pursue a simple moving target with his eyes (McGinnis, 1930).

By the age of five years a number of separate visual perceptual activities emerge, which remain relatively stable through adulthood (Smith and Smith, 1966). The following visual perceptual abilities

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combine to enable the child to visually perceive his words;

visual acuity - the ability to see, e.g., 20/20 vision.
visual attending - the ability to direct and sustain attention to visual stimuli.
visual memory - the ability to retain visual image for a period of time.
perceptual discrimination - ability to recognize likenesses and differences between objects, forms or pictures.
perceptual constancy - includes those permanent attributes of color, location, elements of form such as object, shape and size. Various environmental conditions such as elimination, viewing angle, distance, and position effect perceptual constancy.
figure-ground discrimination - the ability to recognize patterns as figures against a background. Part-whole perception and visual closure are functions of figure-ground discrimination.
depth-perception - function of binocular vision and textural differences (and not as in distance vision which is the result of differeing spatial relationships).
movement perception - perception of movement of person himself or something external to the person.
laterality - awareness of right and left in one's own body.
verticality - postural adjustments such as sitting, standing, reclining, bending and walking.
directionality - the projection of concepts of laterality into space.
body awareness - awareness of body as a whole or mass in relationship to specific objects in the environment.

Visual Acuity

Eichorn (1963) in reviewing normative data on visual acuity discusses the difficulties in obtaining valid data. Following is a table of the longitudinal data she combined from several studies of visual acuity. This provides an approximation of the developmental trend in acuity. These included measuring non-verbal infants, differences in techniques in measuring acuity and nonrandom samples. This causes slight discrepancies in the longitudinal data.

Development of Visual Acuity

Age	Source of Data					
	Schwarting	Allen	Gorman et al.	Keeney*	Gesell et. al.	Slataper*
Newborn			20/350-20/450			
4 months				20/235-20/335		
6 months	20/400					
9 months				20/235		
1 year	20/200			20/200		20/140 est.
2 years	20/100			20/40		20/48
3 years	20/50	20/40-20/50		20/30		20/42
4 years				20/20		20/40

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Development of Visual Acuity (cont'd.)

Age	Source of Date					
	Schwarting	Allen	Gorman et. al.	Kenney*	Gesell et al.	Slataper*
5 years		20/30 20/35			20/25- 20/30	20/33
6 years						20/27
7 years					20/20	20/26
8 years						20/24
9 years						20/23
10 years						20/22
11-13 yrs						20/20
14-15 yrs						20/19
16-18 yrs						20/18
19-54 yrs						20/18

*Data from these two studies have been converted to the 20-ft. notation. Eichorn, 1963.

From this table Eichorn notes that acuity is most rapid during the first two years, but not all of it can be accounted for at the retinal level. A marked increase in acuity occurs in the second year. Variables affecting this include differentiation of the macula at about four months, enlargement of the pupil at about one year and continuous maturation of the cortex throughout infancy.
Children should be carefully evaluated for visual acuity so as to diagnose problems as straismus (faulty muscle coordination, e.g., crossed eyes or squinting), nystagums (rapid involuntary movement of the eyeball), amblyopia (dimness of vision due to disuse of the weak eye from improper muscle balance) or more common types of myopia, hyperopia, and astigmatism.

00102

Visual Perception: Acuity

Age in months	Acuity level	Appropriate Equipment	Alternative
1	20/350-20/450		
4	20/335		
6	20/335-20/400		
9	20/335		
12	20/200-20/140		
24	20/100-20/40		
36	20/50-20/30		
48	20/20-20/40		
60	20/22-20/35		
72	20/27		
84	20/20-20/26		

Visual Attending

Visual attention refers to the ability to direct and sustain attention to visual stimuli. It is a process which allows the child to screen out the influence of certain extraneous stimuli while bringing the effects of other stimuli into clearer focus. Attention is actually preparation for perception or a psychological selectivity which allows a child to select - or consciously react to - only those stimuli that are related to present needs (Rush, 1963).

Visual attending includes the developmental base of fixating, focusing, visual pursuit and scanning eye abilities.

Fixating refers to attending to a selected object versus staring vacantly and without obvious preference at large masses.

Focusing is actually inspecting the environment by shifting the gaze, rather than just fixation on an object. For example, interpreting the symbol code (letters of the alphabet) of reading depends on the learner's ability to focus on a particular visual stimuli quickly without distorting or changing the structure of that perception.

Visual pursuit is the following or tracking of an object with the eyes. Focusing and visual pursuit combined are also known as scanning. Scanning is eye movements that systematically examine various aspects of motionless objects within the visual field prior to figure-ground discrimination, and to detect and follow motion or movement.

Gibson (1966) species three types of scanning tasks: (1) the natural zigzag eye movements that occur as the child surveys his natural environment (focusing); (2) visual pursuit or tracking of moving objects; and (3) the learned, systematic scanning which is required.

Early attending responses and orienting reactions provide the infant with his first sources of information about the world (Gibson, 1963). These reactions represent organized patterns of acton which serve to select information on some adaptive basis around which future abstractions of environmental invariance must take place. Thus, the attending reactions of infants have been suggested to be necessary precursors of adult perceptual-cognitive abilities.

Research on attending abilities of the very young child suggest that the most prolonged periods of attention are likely to be elicited by reasonably complex stimuli and stimuli to which the infant has not been previously exposed (Fantz, R.L., 1961, 1963, 1967).

Further infants were likely to elicit longer fixations when presented drawings of the human face than designs (Kagan, 1967; Lewis, et. al., 1966). The following variables have been identified as being significant when a child is faced with competing stimulus patterns (Hilgard, 1962): object of the greatest size; object with the strongest intensity; object most frequently repeated; object with most vivid contour, contrast or color. Change of the object's state also attracts attention, as well is novelty or that which is socially suggested.

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Visual Perceptual Development: Visual Attending

Age in months	Stage	Appropriate Equipment	Alternative
1	Regards object in line of vision only (Watson & Lowrey). Follows to midline (Watson & Lowrey). Regards face. Eye and head movements not synchronized.	Block	Spoon
1.1	Momentary regard of object. (Bayley).	Block	Spoon
1.2	Regards person momentarily. (Bayley). Prolonged regard of object (Bayley). Horizontal eye coordination of object. (Bayley).	Rag doll	Block
1.5	Regards cube (Bayley). Head follows dangling object. (Bayley).	Mobile	Spoon on thread
1.9	Follows past midline.	Cube	Spoon
2.5	Follows ball across table. (Bayley). Regards raisin. (Denver). Inspects own hands. (Bayley). Regards object as he is bringing to mouth and then releases regard and looks out into space.	Ball	Ball
3.2	Eyes follow moving person. (Bayley). Eyes follow dangling object.		
3.3	Horizontal eye coordination of light (Bayley). Regards own hand spontaneously.		

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Visual Perceptual Development: Visual Attending

Age in months	Stage	Appropriate Equipment	Alternative
4	Eyes follow slowly moving object well. (WWL). Regard goes from hand to object when sitting (W&L).	Dangling object	
5.3	Free inspection of surroundings (Bayley).		
5.5	Tries to maintain fixation of object brought to mouth. Releases regard with uncontrolled eye movements but can refix.		Reacts to paper or items touching face.
6	Visually tracks through 90° in horizontal and vertical planes. Immediately regards a presented object, reaches and grasps it.		
7.5	Eyes follow object in pursuit. (Bayley).		
7-16	Looks at picture in books.	Picture book.	

90100

Visual Memory

Short term visual memory is the ability to retain a visual image for a short period of time. It may also be thought of as the ability to hold visual data in consciousness while scanning. The retina (a patch of neural tissue) most probably serves as a short-term memory. There is some agreement (Atkinson & Shiffria, 1967; Postman, 1964; Sperling, 1968; Waugh and Norman, 1965) that short term memory is short-term not because its neurons "remember" poorly but because every new stimulus overwrites the previous visual image or at least pushes it away from the fore of memory.

Long term memory refers to stored visual information from past experiences. For example, long-term visual memory might contain the information necessary to recognize a particular face as familiar, even if no association can be made with it. A preschool child may recognize letters as familiar but not be able to name them.

Without appropriate visual memory, perceptual constancy cannot be achieved because the child will be unable to develop those internalized, persistent schemata essential to visual discrimination and identification.

Visual memory is typically measured by showing the child a sequence of figures and then is asked to put corresponding chips of figures in the same order. In this sense it is the child's ability to reproduce sequences of nonmeaningful figures from memory.

Information regarding the developmental aspect of visual memory is all but nonexistent in the literature. Many of the tests for measuring visual memory also tap other skills such as verbal mediation or eye-hand coordination therefore confounding results.

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Perceptual Abilities: Memory

Age in months	Stage	Appropriate Equipment	Potential Hazardous Conditions
24	Can locate an object placed under one of three boxes after a 10 second delay (SB).	Boxes; cubes	Boxes; cubes
24-36	Can remember one or more pictures after being shown a picture and then asked to find it among several other pictures. (Cattell, McCarthy & SB).	Visual Discrimination Matching Cards Sets	Pictures cut from magazines.
36-60	Can remember two or more objects or pictures from memory. (Cattell and McCarthy).	Visual Discrimination Matching Cards Sets	Pictures cut from magazines.
60-80	Can remember three or more objects or pictures from memory (McCarthy).	Sequencing Picture Cards	Pictures cut from magazines.
80-102	Can remember four or more objects or pictures from memory (McCarthy).	Sequencing Picture Cards	Pictures cut from

Perceptual Constancy

Constancy is the maintenance of physical properties of an object, figure, or form. The physical properties consist of color, and the form elements of shape and size.

Constancy is the ability to be able to recognize shape in various sizes, shading, textures, and positions in space. This is the ability to perceive that an object has physical properties like shape, size, and position which do not vary in spite of the impression that they sometimes give because of distance, angle or light. For example, a car is perceived as the same size whether beside one or a half-mile away. Color can be perceived as the same whether in bright sunlight or a dull room. A child with difficulty in this area may be unable to recognize a known word in one context if it is presented in another form: color of size. Environmental conditions that effect constancy include illumination, viewing angle, distance and position.

Perceptual constancy enables the child clear up ambiguous situations and helps determine what one sees. It also assists in correcting perceptual distortions. When a child can't maintain a discrimination between figures such as "24" and "42" or "p" or "q" or three dimensional objects he has a constancy delay. Constancy is learned skill that increases in terms of its accuracy as additional attributes of an object are added to the child's previous experiences. In a study by Gibson and Gibson (19) when children were asked to make an identifying response to variations of a standard, children (6 to 8 years) made 46 per cent errors, older children (8-1/2 to 11 years) made 27 per cent and adults made only 11 per cent errors. The specificity of the identifying response is less than the younger the subject.

Size. Size constancy is the perception of the permanent or invariant sizes of an object at different distances from one. According to Thurstone (1944) and Roff (1953) perceptual flexibility has to do with form relationships. It is the ability to locate pictures that are the same size when presented together with pictures of several different sizes to see similarities in different situations.

Shape. Shape constancy is seeing the form or shape of an object as permanent and invariant in spite of changes in the tilt or orientation of the figure. Soon after birth, differences of complexity of contour and shape are responded to. There is no age difference found in subjects from kindergarten to college in matching either identical shapes or different shapes by size. It appears then that shape discrimination appears soon after birth and improves rapidly. The early discrimination of the neonate is imcomplete to the extent that he may focus on only one point of a tirangle.

Color. Color constancy is seeing the object as the same color in spite of changes in illumination.

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Visual Perceptual Development: Constancy

Age in months	Stage	Appropriate Equipment	Alternative
2	Evidence of shape constancy (Bower). Size-evidence of size constancy (Bower).		
6	Size - form judgements of size of 3 dimensional objects (Ling, 1941). Shape - can form judgements of shape of 3 dimensional objects and discriminate between various geometrical figures (Ling, 1941). Distance-Child tends to seek object that is manually closer (Cruickshank, 1941).	Baby shapes.	
9	Distance-Stable differential responses to distance. Child will consistently reach for the nearer of 2 balls despite differences in size. (Misumi, 1951).	Colored mobile.	
15-20	Position-Upright face received more recognition than in other positions. (Watson, 1966).	Rag doll	Doll
24	Distance-Beginning to form relatively consistent judgments of the distance of objects despite the fact that he may be observing objects of various sizes in space, placed a similar distance from him (Bower, 1966a, 1966B). Position-Child is likely to look at figures, pictures, etc. upside-down as in the correct position.	Picture Bocks	
36	Viewing Angle and Position-Copies block design with demonstration 2 trials: 30 min. time limit. (WPPSI)	Colored inch cube designs	Homemade colored designs
36-48	Position-Child can distinguish vertical lines from horizontal lines (Katsui, '62).		

001110

Conditions of Constancy. Two conditions of constancy that are particularly relevant to the young child's perceptual development are position of the object and distance of the object.

Ordinarly, a shape is considered to be upright when it is in its usual, or familiar, position in space, however, Braine (1973) has found that young children consistently make judgments of unfamiliar geometric shapes to be upright in one orientation and disoriented when turned 180° or 190°. She suggests that children's judgments are derived from mechanisms underlying perception of the shape, in particular from the directional processing of the parts of the shape. Hence, when young children copy a rotated shape they will change it to the upright position. (These children may still have a tendency to be guided by cues upright in the bottom part of the figure.)

Between the ages of five and six there is a sudden increase in importance of form orientation. That is, usually by the age of six, a child can identify the horizontal relations of "d" and "p", "g" and "k", and "p" and "b" although they may still have right-left confusions until the age of seven and a half; with "b" and "d" and "p" and "a".

Some two-dimensional elements that create an impression of distance are:

relative size - the largest of two or more objects tends to be seen as closer;

interposition - an object that partially covers another is seen as closer;

texture - density gradiant - provides apparent difference in size and spacing of near and far objects.

Relative motion plays a role in distance judgments in that when an individual moves, near objects appear to move more than further objects.

00111

Visual Perceptual Development: Conditions of Constancy

Age in months	Stage	Appropriate Equipment	Alternative
36-48 cont'd.	Updown dimensions are developed before left-right.		
42-49	Viewing angle and position-copies block design two tirals, 30 min. time limit (WPPSI).	Colored inch cube designs.	Pegboard designs.
49-55	Position and viewing angle-can copy block design two trials with demonstration (WPPSI).	Colored inch cube designs.	Pegboard designs.
49-61	Position and viewing angle-can copy block design two trials, 30 seconds time limit with demonstration (WPPSI).	Colored inch cube designs.	Pegboard designs.
60-84	Size-Size constancy reached (Kubzansky & Rebelsky 1965; Wohlwill, 1963).	Colored inch cube designs.	Pegboard designs.
61-64	Position and viewing angle-Can copy block design two trials, 45" time limit with demonstration (WPPSI).	Colored inch cube designs.	Pegboard designs.
64-70	Position and viewing angle-can copy block design, two trials, 45" time limit (WPPSI).	Colored inch cube designs.	Pegboard designs.
70-76	Position and viewing angle-can copy block design, two trials, 60" time limit (WPPSI).	Colored inch cube designs.	Pegboard designs.
72	Child generally efidences little difficulty in dealing with discriminations involving vertical, horizontal and oblique lines		

Visual Perceptual Development: Conditions of Constancy

Age in months	Stage	Appropriate Equipment	Alternative
72 cont'd.	(Jeffrey, 1966; Rudel & Teuber, 1963).		
76-79	Position and viewing angle-can copy block design, two trials, 60" time limit with demonstration (WPPSI).	Colored inch cube designs.	Various shapes cut from construction paper to make designs.
79 plus	Position and viewing angle-can copy block designs, two trials, 75" time limit (WPPSI).	Colored inch cube designs.	
84	Position-left-right dimensions developed. Ability to discriminate between "b" and "d", "p" and "g" and other asymetrical numbers and letters (Davidson, 1934, 1935).	Language board-lower case letter insets	Sand paper letters (lower case)
120	Can intercept balls thrown from a distance.		

30113

Figure-Ground

The basic organization of visual perception appears to be figure and ground so that we recognize patterns as figures against a background whether or not the patterns are familiar.

From an organizational point of view, a visually perceived "whole" consists of a figure (that part of the total pattern most clearly perceived at a given moment) and the ground (the remainder of the perceptual field or the context).

According to Thurstone (1944) perceptual selection is being able to perceive shape against complex grounds. To understand the meaning of figure-ground perception and its importance, it is necessary to remember that we perceive most clearly those things to which we turn our attention. The brain is so organized that it can select a limited number of stimuli from a large mass of incoming stimuli. For example, we may hear cars outside, people in the hall, persons talking in the room and yet give our attention to an interesting speaker. From a visual standpoint, one may go into a room filled with many objects and persons, yet be conscious of only one or a few. Any object cannot be accurately perceived unless it is perceived in relation to its background. The child bouncing the ball cannot do so unless he can perceive where the ball hits the ground in relation to his body. A child with difficulty in this area may appear to be inattentive and disorganized because his attention tends to jump to any stimuli that comes to him.

When perceiving form, we know that infants perceive a globular form-a fuzzy perception of objects without understanding the relationship of the parts. This perception develops until the infant perceives an integrated form - a perception of the whole, with the understanding of the relationship of the parts.

Part whole. Involved in figure-ground discrimination is part-whole perception. Parts of a situation (or whole) tend to be perceived as belonging to a whole and the manner in which the whole gestalt is perceived will influence the perceived meaning of the parts. In a series of studies Elkind has attempted to identify the developmental aspects of part-whole perceptions.

One study in particular found age-related changes in children's perceptions of part-whole figures, such as "a man made out of fruit." The results indicated that 4-5 year olds usually saw only parts, 5-6 year olds saw only wholes, and 6-7 year olds saw part-whole combinations (Elkind, et. al, 1964).

Visual closure. Visual closure allows the child to perceive a part of an object (inadequate or incomplete sensory data) and to fill in the missing parts so that the object is perceived as complete. Adequate visual closure implies an ability to anticipate and supply missing visual elements by utilizing contextual clues, Measures of closure include the ability to locate a simple figure embedded in a more complex one (flexibility of closure), and the ability ot identify a familiar but incomplete object (speed of closure). Developmentally, the fewer clues the child needs for verbal identification the more developed is his visual closure.

By ages four and five, children have no trouble in tracing overlapping figures. Up to the age of six, they may not recognize pictures presented singly but in the form of dashed contours, and the child will probably be seven before he can perceive pictures made of dashes and superimposed.

Visual Perceptual Development: Figure-Ground

Age in months	Stage	Appropriate Equipment	Alternative
24-72	Can identify parts of body on large paper doll.	Large Raggedy Ann	Identify Body Parts in Mirror
72	Can identify what parts are missing in a mutilated picture.	Body Puzzle	Puzzle made from a picture.
48-60	Separation of part-whole. Report receiving only the parts from which the total drawings were constructed (Elkind, et.al., 1964)	Halves to wholes puzzle	
84	Children alternate children in their organization of figures. (Elkind, et. al., 1964). Increased accuracy and speed in selecting letters from complex backgrounds. (Gibson, 1966).	Language board with letter insets.	
96	60% of children perceive both wholes and parts at the same time.	Halves to wholes puzzle	Pictures cut in half
108	78% of children perceive both wholes and parts simultaneously.	Halves to wholes puzzle	
120-156	Capacity to identify embedded figures in complex designs. (Line, 1931).	Spatial relation cards	

00115

Perceptual Discrimination

Perceptual discriminations is the ability to recognize the likenesses and differences between pictures or objects.

To perceive form at all, an individual needs to perform the following basic perceptual tasks: a) eye movement, b) detection of form, which merges also with such concepts as brightness, c) discrimination, which is limited by visual acuity, and d) scaling, a more complex task than discrimination but basically related. Scaling relies on perception of similarity, complexity, meaningfulness, and other dimensions.

Once form is perceived, it is put into the mind by first, the recognition and identification of the form, then, the imaginative construction of the form, and finally by association of the form with things that the form was not intended. These last two are affected by the individual's past experiences and the stimulus variables of the form. Children learn to identify familiar 3 dimensional objects first, then the differences between them and later 2 dimensional objects.

Factors of concepts of shape, color, number, arrangement, and size are involved in this discrimination process (Thurstone, 1944), Gibson, (1963) describes this skill as detection of distinctive features. It is learning to detect differences, discovering ways in which each figure is unique, or different from other members of the set.

In terms of reversals of figures if a child can't tell the difference between p and q, it's a discrimination problem, however, if he can tell the difference but can't maintain it, it's a constancy delay.

Infants show marked changes in visual preferences during the early months of life, especially when different patterns are shown to them. Kagan (1967) suggests that objects of intermediate complexity and intermediate brightness are preferred to objects that are extremely complex in design, or are too bright, or are not sufficiently illuminated. Children show a preference for color over form between the ages of 3 and 6, and a preference for form in children over 6 years of age (Brian and Goodenough, 1929; Corah, 1964, Suchman & Trakasso, 1966). Berich (1970) demonstrated that children prefer form over colors and borders.

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Visual Perceptual Development: Perceptual Discrimination

Age in months	Stage	Appropriate Equipment	Alternative
1.5	Visually recognizes mother (Bayley). Glances from one object to another (Bayley).		
1.5-1.9	Smiles responsively (Denver).	Mirror	Mirror
2-6	Aware of strange situation (Bayley).		
2.6-4.4 yrs.	Picks longer line 3 of 3 (Bayley).	String/cord/yarn	
3 mos.	Seeks novel visual experiences.		
3-8	Discriminates strangers (Bayley).		
36	When presented with stimulus picture of an animal. Can point to identical animal on page of several animals (S-B).	Visual discrimination matching sets	Picture story book.
54 mos.	Visual preference for 2 dimension color and form over form-texture. (Siegel, 1973).		
78	Visual preference form dimensional form and texture over form-color OSiegel, 1971).		

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Depth Perception

Depth perception is the fusion in the brain of slightly unlike images of the eyes. The perception of an object in the right eye is seen at a somewhat different angle than the perception of the object in the left eye.

At six months depth perception is evident when child is able to crawl, (Wal, 1961; Gibson, 1960), not willing to walk over a "visual cliff" formed by clear glass that was an extension of a high table. From investigations with the very young child to adulthood it becomes apparent that judgments concerning the relative placement of objects within the distant space field are relatively independent of those involving depth (the relative closeness of two or more objects to the observer). Depth perception then is how one sees three-dimensional space. According to Baird (1963), the differentiation seems to occur during late infancy and early childhood. Smith (1965) noted that nursery school children seem dependent on perception of depth rather than distance in their play activity in that the sizes of nearby objects are judged in terms of the child's manipulative capacities, while distances immediately adjacent to the child are scaled in units corresponding to his movements, such as two steps away.

According to Gibson (1963) solid objects which possess depth at their edges are discriminated at an early age than two-dimensional pictures or line drawings. This is because the solid objects possess more attributes by which the child can identify the object from another. Therefore Gibson suggests that what is learned is isolation from background or differentiation rather than associative meaning for depth. A two dimensional element that creates a depth illusion is linear perspective - the greater the convergence of lines, the greater the impression of depth.

Movement Perception

There are many forms of perception of movement. The two main classes are the experiences of the movement of the person himself and movement of something external to the person. To produce the visual experience of movement, some kind of spatial change in the retinal image had to be produced in time. Temporal sequences of events have to occur on the retina. The two major types of movement external to the person are movement of perceived objects in motion and perception of apparent movement without target displacement.

Physical factors such as intensity, position, and timing substitute for the usual displacement in apparent movement (Gibson, 1969; Kidd and Rivoire, 1966; and Wohlwill, 1963). Although visual movement perception has been studied in its developed state, little information exists as to the developmental sequence of movement perception. Most studies showed that with increasing age the temporal range of apparent movement between perceived simultaneity and perceived succession decreased. One investigator, Pollack (1966) found a temporal range of apparent movement decreasing from 6 years of age to 9 years and then increasing up to age 11. At birth perception of movement when more than one object is present is not adequate. Child is unable to coordinate motor effects when attempting to deal with rapid movement in his space field. By six months of age the child begins to form judgements of speed.

According to many investigators (e.g. Piaget, 1969; Zapparoli and Reatto, 1969; Fairbank, 1969; Forgus, 1966), the processes involved in the perception of apparent movement are related to the larger prob-

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lem of perceptual organization. It is quite likely that the variables affecting perceptual organization also influence the perception of apparent movement. Rock and Ebenholtz (1962) and Vernon (1952) state that past experience, learning, and set influence the perception of apparent movement. Segal and Barr (1969), however, found that cognitive style was most influential. With regard to attentional factors, Lewis and Baumel (1970) found color was a significant stimulus dimension with 3- and 4-year-olds.

Laterality

Laterality is defined as the awareness, or perception, an individual has or right and left gradients within his body. The right and left sides of our bodies are two independent systems. All nerve systems innervating the left side of the body, for example, are distinct, going through the spinal cord, crossing into the brain stem, and entering the right hemisphere of the cortex. Laterality, therefore, is learned by experimenting with both sides of the body, by observing the differences between these movements, and then by comparing these differences in sensory impressions. Thus certain qualities of movement are ascribed to the left side of the body and certain qualities ascribed to the right side of the body.

The development of laterality helps the child to keep things straight in the world around him. (The only directions an individual has are based on relation of objects to his own body). Laterality develops primarily out of balance. A child learns his left and right by innervating one side of his body against the other, and executing the appropriate follow-up movement so that he does not lose balance.

Problems in laterality may arrest a child's further development. There are two important stages at which a child's development can stop. The first of these stages is revealed in

1) the bilaterally symmetrical child. This child's movements and responses are organized so that both sides of the body are performing the same act at the same time. Here the child's motor development reveals no concept of laterality. Motor responses are generally imitated with both sides of the body.

The second stage at which a child's development of laterality may stop is in the

2) unilateral child. This child, unlike the former, becomes almost completely one-sided. In every activity, he merely drags along the other side. When this child is required to perform bilaterally, one side usually leads the other, without any real cooperative effort of both sides in the activity.

It is important to note that while both of these stages are appropriate in a normal developmental sequence, a child's development may be arrested in either stage and thus affect later perceptions of objects in relation to self and each other.

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Gross Motor: Laterality

Age in months	Stage	Appropriate Equipment	Alternative
1-3	Head predominately rotated to a preferred side. Lies in a tonus-neck-reflex attitude.	Rattle movement in front of child's head.	Car keys movement in front of child's head.
4-8	Tends to unilateral approach. Symmetrical postures predominate in supine position.	Rubber ball.	Coffee can.
8	Shows hand preference - unilaternal. Manipulation, other hand remaining passive.	Teether.	Baby Spoon.
13	Combination of lateral and overhand approach.	Mobile over bed.	Homemade mobile.
14	Overhand approach predominates.	Mobile over bed.	Homemade mobile
24	Manipulates unilaterally, but occassionally makes bilateral approach.	Wooden blocks.	Paper cups.
42	Predominate right handed manipulation shifts to left hand (or vice versa), or to alternation.	Scissors	Scissors.
42-60	Child aware of limbs on both sides of body but unaware of them as "right" or "left" (Spiomek).	Stacking blocks.	Pots and pans (lids).
48	Can make circles (in the air) with the index fingers of both hands for 10 seconds with the arms extended horizontally at the sides in a seated position (OT). Can clasp another's right hand, first with right hand	Rocking boat, balance board, tricycle.	Large muscle equipment that provides opportunity to use both sides of body in a combined effort

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Gross Motor: Laterality

Age in months	Stage	Appropriate Equipment	Alternative
48 (cont'd.)	then with the left hand, finally with both hands (OT).		e.g., climbing equipment, equipment to crawl through, tricycles, equipment on which to balance.
60	Left to right orientation. Can cross left knee over right one, with directions (OT).		

001121

Verticality

This perception of the upright is a necessary development in the child, as he continually depends on his posture as he relates his body to his environment. Through posture, the child maintains a constant orientation to the earth's surface and to the environment which surrounds him.

Good posture is important for proper functioning of the body and contributes to good appearance. Proper alignment of the body parts promotes efficiency of movement and endurance. The person with good posture who moves gracefully projects poise, confidence and dignity. From the mechanical standpoint, with good posture, the bones and joints are in position to take the stress of weight and movement and the musculature is firmly balanced in order to hold body organs in place. With poor posture, the bones are out of line and the muscles and ligaments take undue strain, and even pain. In some instances, poor posture affects the position and function of organs, specifically those in the abdominal regions. Habitual faulty posture means being in a position of poor alignment continuously, or at least most of the time. The result is an adaptive stretching or shortening of muscles. To sit erect, but also at ease, the type and size of chair must be suited to the individual. Sitting slumped puts a strain on many parts of the body, particularly the back. Sitting up straight overarches the low back. Constant sitting in school desks means lack of specific exercises to loosen joints, to contract muscles and to stretch the body, which causes the body to get in bad shape. A common posture harmful to health is when the neck and head are sloped forward, and the shoulders rounded. The upper back thus curves out when the lower back curves in. This over-tilts the pelvis, and affects hip joints and leg movements.

A chair satisfies postural requirements when the child is able to sit against the backrest and the height of the seat is the same as the shod-lower-leg. When children sit on chairs that are too low, there is a tendency for them to slouch; i.e. to adopt bad postural habits. When chairs are too high, children are forced to "perch" on the front of the seat, to sacrifice comfort of the backrest. The differences between short and tall children necessitates chairs and tables of more then one size. Otherwise, postural needs of these children are being ignored.

Posture also provides for safety. If a child cannot maintain his relationship to his center of gravity and to the earth's surface, then he is not in a position to move or respond quickly and efficiently. The postural mechanism exerts dominance over our behavior, as exemplified when trying to "let" oneself fall. It becomes almost impossible to consciously lose balance and thereby fall on one's face.

One must not use adult posture as the criterion of normality for posture in children. Children at different ages have a posture which is typical of that age and which is normal for them. Posture has a natural history which must be recognized.

Flat Feet - Foot posture varies with age. When any child begins walking, he does so upon feet that appear flat, partly because there is a true flatness of the medial longitudinal arch and partly because the arch is filled in by a fat pad which inevitably disappears. Over the next four or five years, the majority of children develop a medial longitudinal arch, but there are approximately 15% who remain flat-footed throughout life. Those people who remain flat-footed seldom have trouble resulting from the planus shape of their feet.

Bow Legs - It is a posture characteristic at a certain age; common

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from the beginning stages of walking to the age of 2-1/2 years; and seldom requires treatment.

Knock Knees - Again, a situation in which there is a characteristic posture at a certain age; a high proportion of the population between the ages of 2-1/2 and 7 years have knock-knee deformity.

In-Toed Gait - An in-toed gait in children may have one or more of three anatomical causes: (a) inset hips (hips which have internal rotation in excess of the range of external rotation; common between the ages of 4 to 12 years); (b) internal torsion of the tibias which is commonly present from the age of walking to 2-1/2 years; and, (c) metatarsus adductus, commonly present from birth to the age of 5 years. These three conditions are all postures at a certain age, and all have a very strong tendency to improve and correct themselves.

O'Donnell (1969 distinguishes between static posture (posture while remaining in one position) and dynamic posture (posture while moving), believing that more emphasis should be placed on the latter than on the former (as is traditionally done). He further notes that children should be taught ways of improving their dynamic posture, much in the way skiers are taught. Making the center of gravity closer to the base support, enlarging the base of support, and using limbs and utensils to compensate for the shifting center of gravity are all ways to improve dynamic posture.

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Gross Motor: Verticality

Age in Months	Stage	Appropriate Equipment	Alternative
2	Holds head bobbingly erect.		
6	Sits unsupported for a few seconds (MT.)		
7	Sits briefly leaning forward on hands (Watson & Lowrey). Supports large fraction of weight in standing (Watson & Lowrey). Bounces actively in supported standing (Watson & Lowrey).		Bouncers, equipment on which they can support themselves.
11	Sits steady indifinitely (Watson & Lowrey).		
12	Stands alone temporarily without support (MT). Expresses sense of "up and down" by wriggling & gesture.	Plastic block furniture.	Large cubes or pieces of equipment on which they can support themselves & which they can use departing points.
15	Increased tendency to tilt head back & to circumduct arms upward & backward. Walks few steps with self-starting & self-stopping.		
18	Propensity for vertical orientation. Sits directly in a small chair (MT & Watson & Lowrey).	Plastic block furniture.	Small chairs which they can easily use in sitting and "rising".
24	Stands with heels together (CDP).		
48	Speed of general posture; less totality in bodily orientations.		

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Gross Motor: Verticality

Age in Months	Stage	Appropriate Equipment	Alternative
60	Posture is predominately symmetrical and closely knit. Frequently alternates posture from standing, sitting, and squatting.		
64	Likes to lie prone on floor while reading, doing puzzles, etc.		
68	Frequently assumes awkward positions.		

001225

Directionality

Directionality is the perceptual projection of directional concepts (i.e., left-right, up-down, and before-behind) into external space. Only through such projection can outside objects come to have spatial dimensions or relationships.

Piaget and Gesell discuss the developmental sequence of directionality in terms of:

1) "egocentric localization" where objects are seen in relation to self - subjective space; and
2) "objective localization" where objects are seen in relation to each other without self - objective space

An intermediate step in transferring laterality to directionality is supplied by eye and its kinesthetic information. A child must be able to control his eye with accuracy and knowing where his eye is pointed. A great deal of information about space and the location of objects in space comes to us through our eyes.

In a similar manner, the child learns "up - down" by transferring "up - down" in own body to up - down into outside space.

Thus, observations of relationships between objects in space becomes difficult, if not impossible, luntil these coordinates (laterality, verticality) are clearly established within the body. The development of directionality should be looked at in terms of the ontogenetic gradients provided earlier for laterality and verticality.

Body Awareness (Body Image)

This is the concept that an individual has of his own body as a result of subjective experiences with his own body and how he organizes them. According to Cratty (1970) some view body image as more of a global concept encompassing all the movement capacities as well as sensory impressions created by these movements. Others view body image merely as a score on a given test. Benton (1959) refers to three elements which are necessary to the formation of body awareness, beginning in early infancy: the integration of sensory information, learning, and symbolic representation. Impairment in any one of these three elements can be expected to produce a lag in the development of body awareness.

Anthony (1971) further differentiates the development of body image. He suggests that because feeding is the infant's primary activity, the mouth is the first center of perception, followed by the eyes, ears, and hands. Once the infant can coordinate these various body parts, he then begins to explore the rest of his body and further develop his body awareness.

There is little doubt of the general acceptance of the concept - that each individual does develop an image of his body. How this can be measured is an entirely different issue. There is some controversy over the best way to determine a child's body image.

Some measure it by having the child draw the human figure. Any distortion of details, omission of parts, variations in size, differences in emphases, are thought to reflect a state of confusion in body image of drawer. This is a very subjective measurement.

Another method of measuring body image consisted of requiring the child to verbally label body parts or to identify them by pointing. Thus any inaccuracies in labeling or pointing is attributed to body image distortion.

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Kephart (1960) suggests behavioral criteria by which a child with body image problems can be detected.

1) A child who selects a space on the floor that is too small for the task defined (or vice versa) indicates an imperfect awareness of the space occupied by his body in various positions.
2) In activities which require children to move various parts of the body upon command, a child with body image problems may not be able to move one arm without moving the other arm.
3) A long hesitation before the child moves a designated part also may be indicative of problems.

There are generally thought to be four broad categories of body image distortion. These include:

1. Feelings of the loss of body boundaries which involve a sense of blurring of the demarcation line between one's own body and that which is outside one's body.
2. Sensations of depersonalization which revolve about a perception of one's body as strange or alien.
3. Attributing to one's body of unrealistic qualities and extra parts.
4. Confusion regarding the distinction between right and left sides of the body (related to laterality).

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Visual Spatial: Body Awareness

Age in months	Stage	Appropriate Equipment	Alternative
0-24	Identifies gross body parts verbally. "tummy", back, arm, or leg. (Cratty).	Large Rag doll.	Full length mirror.
3	Separation of "I" from "Not I". (Anthony).		
8	Recognition of "I". (Anthony).		
15	Development of observable self (Anthony).	Full length mirror.	Full length mirror.
24-36	Aware of front, back side, head, feet. Can locate objects relative to these body references (Cratty).	Motor expressive language cards.	
39-62	Identifies body parts by touching. Draws a man 3 parts (Denver). Imitates movements in angels in the snow (Kephart).		
42	Turns sidewise to adjust to narrow opening.	Giant interlockers snap wall	Instruct child to walk between narrow door opening.
48	More aware that there are two sides of body more detailed awareness of body parts.	Body puzzle.	Child lies on newspaper print and adult traces him.
54-72	Draws a man 6 parts. (Denver).		

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Visual Spatial: Body Awareness

Age in months	Stage	Appropriate Equipment	Alternative
60	Clenches the teeth and shows them by parting the lips on request (OT). Can locate self relative to objects, and objects relative to self. Trunk in drawings (Cratty).	Motor expressive language cards.	
72-96	Shows hesitancy in identifying one than one body part (Purdue).	Body puzzle.	
72-108	Slight errors in obstacle course.		
84	Can knit eyebrow (OT).		
84-96	Facial expressions appear in figure drawings. More details (Cratty).	People puzzle.	
96	Now aware of posture in himself and others. Very dramatic in activities with characteristics & descriptive gestures. Can wrinkle forehead (OT).	Full length mirror.	Dress up clothes.
96-120	Slight hesitation or confusion in identifying body parts, but steadily improves with age (Purdue).	Large body puzzle.	
108-120	Can describe arrangement of objects from another perspective (Cratty).	Symmetrical match up.	Show child 4 objects, ask him to close his eyes & name objects he can remember.

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Visual Spatial: Body Awareness

Age in months	Stage	Appropriate Equipment	Alternative
120	Closes eyes alternately.		

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PHYSICAL ABILITIES

Many physiological and anatomical factors limit an individual's ability to perform perceptual-motor tasks. For example, a child's ability to pedal a bicycle depends on many factors, including the utilization of force (the contractile strength of various muscles), maintenance of sufficient speed (governed by the mass of the limbs and the strength), being able to balance the bicycle (a function of the vestibular mechanisms of the inner ear), and the interaction of all perceptual systems.

A child's individual motor performance is therefore based in part on the ability to cultivate and deal with the following individual physical abilities:

Strength - the capacity to exert muscular force.
Flexibility - the range of motion at a particular joint or combination of joints.
Balance - the ability to maintain the body in equilibrium relative to gravity.
Agility - the ability to move the body or its parts through space while changing directions quickly and accurately.
Endurance - the ability of the body to work against a moderate resistance over a period of time.

In addition to these fundamental physical abilities, several other characteristics such as speed, power, coordination and syncrony are important to the more mature perceptual-motor skills.

Strength

Strength may be defined as the amount of force that can be exerted by a single muscle or a group of muscles in one single maximum effort. Strength is influenced by the size of the muscle, is specific to the muscle or muscle group, and can only be increased if the muscles are required to perform a greater amount of work than usual. Strength can apply to specific muscle groups, as in gripping, or to the whole body as in running or lifting weight. It is also a critical component in pushing, carrying, kicking, throwing, climbing, jumping and such exercises as sit-ups and push-ups.

Strength is fundamental to movement for it is the capacity to exert variable and appropriate amounts of force to resolve a performance demand. The child must have an adequate degree of muscular strength to move the bony levers of the skeleton in the desired directions. Several different forms of strength have been identified. Static strength may be thought of as the ability to exert force (pounds of pressure) against an immovable object. Dynamic strength or power is force applied through a range of motion in a controlled manner. Ballistic, or explosive strength, is the ability to propel a relatively heavy object.

The infant utilizes force or strength to learn which objects are moveable. The earliest manifestations of strength are when the infant moves in random land diffuse ways. The first defineable pattern of muscular strength and alignment is probably the tonic-neck-reflex. This reflex is observed when the head and neck are turned, the rest of the body moving in a precise and repeatable manner. The head must evantually move independently, if the eyes are to serve the purpose of guidance through space. As the neck muscles strengthen and the child can gradually sustain the head in elevation for a period of time, the head and neck will resist the tonic-neck-reflex in-

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clination and hold to a centering task.

Strength is perhaps the most fundamental of the physical abilities, for within the first year of life, the infant rises to a standing position and has thus overcome the limitation of gravity. Muscles hold the child's frame erect, and by stretching and contracting enable the child to move that frame in the desired direction at the appropriate speed. Muscular strength continues to develop throughout childhood, with almost no differences between boys and girls of the same body size and build until pubescence (Corbin, 1973).

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Physical Abilities: Strength

Age in Months	Stage	Appropriate Equipment	Alternative
0.1	Lateral head movement (Bayley).		
0.7	Prone, lifts head (Denver).		
0.3-3	Head held erect without support. (Bayley).		
0.7-4	Head held erect and steady (Bayley).		
1.9-2.6	Prone, head up 45° (Denver).		
1.3-3.2	Prone, head up 90° (Denver), (4-6 in W&L).		
1-5	Holds head steady (Bayley). Sits with support (Bayley).		
1-6	Lifts legs into vertical position and grasps foot (LDS). When held with feet flat on floor, leaves weight on feet and bounces up & down (LDS). Kicks strongly with legs alternating (LDS). Moves arms briskly and holds them up to be lifted (LDS).		
2-4.3	Elevates self by arms (Denver).		
2-7	Rolls over to side from back position (Bayley), (7-5 Bayley; 3.8 Denver).		
2-6	Sits with slight support (Bayley), (1-6, LDS).		
3.0-7.7	Pulls to sit (Denver), 4-8 Bayley).		

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Physical Abilities: Strength

Age in Months	Stage	Appropriate Equipment	Alternative
3-8	Tries to sit (Bayley).		
4-6	Head rotates with increasing freedom in supine position (LDS).		
4-6.5	Resists toy pull (Denver).		
4-8	Sits alone momentarily (Bayley).	Automobile baby seats	
4.8-7.8	Sits without support (Denver).		
5-10	Stands while holding on (Denver).		
5-12	Pulls self upright to a standing position (5-12 Bayley), (6.0-10.0 Denver), (W&L).		
6-11	Raises self to sitting (Bayley).		
7-14	Sits down with support (Bayley).		
9.1-13	Pulls to stand (Denver). Stands momentarily.		
10	Increased facility in head and trunk movements - tips head way back in ocular pursuit (W&L).		
9.8-18	Stands alone well (Denver). (Bayley).		
10.4-14.3	Stoops and recovers (Denver).		
15	Rises from sitting to standing position in middle of floor without furniture or wall support.	Rocking horse Rocking chair	

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Physical Abilities: Strength

Age in Months	Stage	Appropriate Equipment	Alternative
15-30	Walks sufficiently well and can push or pull toys and objects.	Pull toys, wagon balls	
18-24	Squats to rest or play with object on ground and rises to feet without hands (LDS).		
21	Pulls and leads person to point out object of interest.		
30	Can hand and support own body weight for four seconds (Sinclair).	Climbing tower, monkey bars	
36	Rides tricycle, using pedals (W&L).	Tricycle	
42	Rises to standing position from lying on back; body turns slightly during effort; no hand support (Corbin).		
60	Rises directly to standing position from back lying without turning of body or hand support (Corbin).		
72	Right hand grip strength 19-24 pounds (Keogh, 1956). Can do 13 bench push ups (Kirchner). Pushes and pulls large blocks and furniture to make houses, etc. Carries objects of increasing weight. Lifts with legs and controls weight while moving. 24-7 lb. -- 36 - 10 lb. --	Chinning bar, bench, rug or mat, climbing apparatus or tower, monkey bars. Cartons, wooden blocks, furniture, hollow barrels. Children should have access to objects of a variety of sizes, shapes, and weights,	

Physical Abilities: Strength

Age in Months	Stage	Appropriate Equipment	Alternative
72 (cont'd.)	48 - 12 lb. -- 60 - 16 lb. -- 72 - 20 lb.	i.e., suitcases, boxes, pieces of wood, stools, etc.	
84	14 Bench push-ups (Kerchner). 12.5 Curl-ups (Kerchner). 20 squat jumps (Kerchner). Right hand grip strength 23-26 lbs. (Keogh).	Climbing rope, freeman's pole, horizontal ladder, trapeze.	
96	15 Bench push-ups (Kerchner). 15 Curl-ups (Kerchner). 22 Squat jumps (Kerchner). Right hand grip strength 28-31 lbs. (Keogh).		
108	Right hand grip strength 30-37 lbs. (Keogh).		

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Flexibility

Flexibility may be defined as the range of motion present at a given joint. It also refers to the ability to move parts of the body in relation to each other with a maxim in range of extension and flexion. Flexibility is implicit in such things as bending (contracting and flexing one or more body parts) and stretching (extending and expanding one or more body parts) and may be observed in a child's play as reaching, twisting, turning, leaning, squatting, weaving between the bars of the jungle gym, turning on the parallel bars, skinning the cat (turning over while suspended from the rings or bars), etc.

Flexibility is specific to certain body regions. It should be noted that flexibility tends to diminish with age, but that this diminution is not necessarily the result of a limitation imposed by increasing strength. Flexibility appears to be the only physical ability which diminishes with age during the growing years (Frostig, 1969). According to Barsch (1968), flexibility tests of young children have been neglected in practically all studies of the psychomotor dimension and the present review of literature generally verifies this lack of information about childhood flexibility.

Flexibility may be increased through moderate progressive stretching, which must be systematically undertaken because flexibility is specific to each joint in the body. Attempts to increase flexibility should emphasize the maximum extension of movement in the joints and stretching the muscles. Flexibility is an important factor in efficient movement and in the safety with which one may engage in a variety of sporting and play activities.

Balance

Balance involves the ability of an individual to maintain equilibrium relative to gravity. It is the state of stability produced by an equal distribution of weight on each side of a vertical axis, and is most often affected by altering the location of the center of gravity relative to the base of support. The center of gravity is generally located within the region of the midpoint between the hips, and the body will be squarely over the supporting base. The base of support may be defined by the position of the body parts in contact with the surface (generally the two feet) and the area between those contacting parts. If the vertical axis or line of gravity falls near the center of the base of support then the body will be in balance.

The maintenance of good balance depends upon the interaction of the following three primary systems:

1. muscular feedback from the postural muscles (proprioceptive feedback).
2. information from the visual system which aids the child in locating his or her body in space.
3. information from the labyrinthian (inner ear) mechanisms.

The basic physiological development of these three systems is relatively mature in the young child. However it takes a great deal of experience for the child to be able to "utilize" the information available from these systems. It is interesting to note, however, that the labyrinthine or vestibular organs are not fully developed until about age two or three. This is probably why motion sickness is rarely observed in infants under two years of age. The balance mechanisms, along with vision, tactile information, and data from

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the proprioceptors, enable the child to perceive the body's orientation in space. The visual mechanism is especially important in lessening the effects of vertigo allowing visual focusing on the point surrounding the spinning activity.

Balance is not a constant factor, but an everchanging component of total body movement and is affected by the changes in the location of the center of gravity relative to the base of support and by gravity. The following forms of balance have been identified:

static balance - the child must balance upon a stable base of support (i.e. standing on tip-toes). The earliest form of balance is the ability of the child to sit up and then to maintain an upright posture while standing.

dynamic balance-the child must maintain a position on a moving surface or while the body is moving. This occurs when the legs are moved in any direction causing locomotion, or in such activities as walking on a balance beam, hopping, etc.

object balance - the child must give minimal support to something without letting it fall, such as balancing a stick or ball on the finger.

The child's ability to balance should develop as the result of a variety of experiences. However in children with severe problems, Cratty (19) suggests that balance will not improve with out specific experience or practice. The ability to balance is extremely important to all children because it underlies almost all complex motor skills, such as throwing, running, skipping and catching. The ability to balance one's body while performing is not only necessary to the efficient execution of the various motor patterns but also to the safety of the child during many perceptual-motor activities.

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Physical Abilities: Balance

Age in Months	Stage	Appropriate Equipment	Alternative
4.8-8	Can sit without support and hold head steady and set forward (W&L). (Bayley), (Denver).		
5-12	Stands while holding on (Bayley). (Denver). (W&L).		
9-18	Stands alone (Bayley). (Denver).		
11-20	Stands on right foot with help. (Bayley).		
12-23	Stands on left foot with help. (Bayley).	Games or stunts which involve single leg balancing.	
12-18	Picks up toy without falling. (LDS).		
13-26	Tries to stand on walking board (Bayley).	Low balance beams, line of bricks.	
15-29	Walks with one foot on walking board (Bayley).		
15-36	Stands on one foot momentarily (Bayley) (Berry) (LDS).		
18-24	Squats to play, balancing without hand support (LDS).	Balance board	Games with paths or lines to walk on or near the ground.
18-30	Walks on line, general (Bayley).		
19-30	Stands on walking board, attempts step (Bayley).	Balance board	

Physical Abilities: Balance

Age in Months	Stage	Appropriate Equipment	Alternative
21.7-39	Balances on one foot for one second (Denver).		
21.6-51	Balances on one foot for five seconds (Denver).		
24-30	Walks on walking board, alternates steps part way (Bayley).	Balance beam or board which is elevated.	
30-36	Walks on board slightly elevated from the ground (LDS).	Balance beam.	
36	Walks up stairs, one foot per step holding rail. Can walk 3" balance board (Corbin).	Loft	
36-39	Balances on one foot for ten seconds (Denver).	Balance beam.	
36-48	Stands on each foot 4-8 seconds (LDS). (Denver). Walks on 6" walking board with alternate steps and only 1-3 step-offs (LDS).		
39	Walks down stairs using rail, one foot per step. Walks one inch line forward and backward (MT).	Climbing boxes, steps, inclined plane.	
42	Walks up and down stairs, no rail, both feet to same step (MT).	Loft	
48	Remains standing; one foot advanced; eye closed (OT).		

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Physical Abilities: Balance

Age in Months	Stage	Appropriate Equipment	Alternative
48-60	Stands on each foot more than 8 seconds (LDS).		
54	Walks up and down stairs, one foot per step, without rail support (MT).		
	Walks with one foot directly behind the other and touching (MT).	Balance beam/Loft	Walk on straight line or rope on ground.
57	Stands on one leg for nine or more seconds. Walks full length on balance beam.	Balance beam	
60	Takes 10 steps on 2" balance beam (Keogh).		
	Walks distances on tiptoe (CDP). Balance with feet together heels off without support (10 sec.) (OT), (Denver). Stands on one foot more than 8 seconds (W&L).		
60-72	With eyes closed, balances on each foot alternately (LDS). (W&L), (108 mo. OT).		
72	Remains standing weight on one leg only for 10 seconds, eyes open (OT).		
	Takes 11-13 steps on 2" balance beam (Keogh).		
72-84	Can walk on balance beam with occassional difficulty but is able to regain balance (Purdue). Can walk backward or sideward on balance beam but	Walking board or balance beam. Series of balance beams in a row.	

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Age in Months	Stage	Appropriate Equipment	Alternative
72-84 cont'd.	steps off more than 2 times in direction of movement (Purdue).		
84	Balances on tiptoe bending forward from the hips (OT).		
96	Crouches on tiptoe (OT).		
108-120	Can walk backward on balance beam with occassional difficulty but is able to regain balance (Purdue). Walks on balance beam (sideways, backward and forward) easily and maintains dynamic body balance (Purdue).		
120	Balances on tiptoe, eyes closed (OT).		

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Agility

Agility refers to the ability of a child to react quickly with controlled efficient movement of the entire body while changing directions. It involves the ability to make successive movements in different directions as efficiently and as rapidly as possible, or the ability to adjust one's position quickly. Directional changes may be lateral, oblique or complete reversals of the path of movement as well as changes in the level of the movement (high-low).

Agility is primarily concerned with the ability of the performer to shift directions while moving, with grace, ease, comfort and economy. It may involve fine motor movement such as typing, drawing, or playing the piano, or more gross motor movements such as a zig-zag run.

Agility contains the concept that the directional shifting is fully under the control of the individual and utilized by the individual selectively and consciously for the purpose of solving the problem (Barsch, 1968). That is to say, the greater the agility of the child, the greater the options of movement to solve a given problem. Agility is especially importnat in activities requiring quick starts and stops, and changes of direction such as dodgeball, shuttle run, changing from sitting to standing, forward roll, figure-eight run, obstacle courses, swinging, rocking, and spinning.

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Physical Abilities: Agility

Age in Months	Stage	Appropriate Equipment	Alternative
12-18	Runs stifly & upright with eyes focused on ground. Can't go around obstacles (LDS).		
18-24	Can stop & start easily & avoics objects (LDS).		
21	Runs well with only occasional falling (MS).		
24	Runs well with no falling (W&L).		
66	Runs figure 8 course with good balance (Sinclair).		Obstacle courses, tunnels, barrels, boxes.
72	Runs 120' shuttle run in 13.8 sec. (Keogh). Runs zigzag (60') run in 11.3-12.1 (Keogh).		
84	Runs 120' shuttle run in 13.1 sec. (Keogh). Runs 60' zigzag run in 10.1-10.4 sec. (Keogh).		
96	To run 5 meters, pick up a matchbox, make a square, etc. (OT). Run 120' shuttle run in 12-13 sec. (Keogh). Runs 60' zigzag run in 9.6-9.8 (Keogh).		

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Endurance

Endurance may be defined as the ability to sustain activity over a relatively long period of time. In general the endurance of children increases with age as do most of the physical abilities. Lack of endurance does not present much of a safety hazard in most children unless the child is forced to continue activity beyond the psychological and physical limits which would indicate the necessity for termination of the activity. Historically however, the "Child's Heart Myth" has been perpetuated. As early as 1879 Beneke warned of the dangers of repetitious work of the child's heart. He warned that children should refrain from vigorous exercise because of the "natural disharmony" between the development of the size of the heart muscle and the size of the large blood vessels (Corbin, 1973). However Karpovich (1937), Astrand (1952) and others have shown that although the size of the major artery is smaller in proportion to the heart in young children compared to older children, the blood carrying capacity is proportionate to heart development. Corbin (1969) is even more emphatic and specifies that "a healthy child cannot physically injure his heart permanently through physical exercise" (Corbin, 1969, pp22-23).

Two forms of endurance have been identified: Muscular and Cardiovascular. Muscular endurance refers to the ability of a muscle or muscle group to continue contracting over an extended period of time against a moderate resistance. Muscular endurance is closely related to strength, but differs primarily in that it involves a greater number of contractions with moderate resistance, whereas strength development involves fewer contractions with greater resistance.

Cardiovascular endurance refers to the ability of the human organism to supply oxygen to the working muscles and the ability of the muscles to utilize oxygen to support work. Cardiovascular endurance is enhanced by playing a stress on large muscle groups for an extended period of time through such activities as running, swimming and cycling. The circulatory and respiratory systems are taxed to a point where they are required to supply greater quantities of oxygen to the muscles so that they may continue work. The upper limits of cardiovascular capacity are illustrated in the following table.

Age	Max. oxygen intake		Max. oxygen intake/Kg. body wt.		Max. H.R.	
4-6	0.88	1.1	47.9	49.1	204	203
7-9	1.50	1.75	55.1	56.9	211	208
10-11	1.70	2.04	52.4	56.1	209	211
12-13	2.31	2.46	49.8	56.5	207	205
			little sex differences			

Adapted from Per-Olaf Astrand, Experimental Studies of Working Capacity in Relation to Sex and Age. Copenhagen: Munkagoaard, 1952.

The child's development of endurance is reflected by the gradual decline with age of pulse rate and breathing rate, and the in-

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crease in ability to sustain muscular activity. By age 9 the pulse rate is rarely above 90 beats per minute and respiration is approximately 20. Children during these ages are characterized by being easily fatigued but recover rapidly. By age 12, the heart rate is generally 80-90 and respiration rate 15-20.

PERCEPTUAL MOTOR ABILITIES

Perceptual motor abilities require the combination of visual perceptual, fine motor, and gross motor abilities. Generally the skills which require coordination of visual perceptual and fine motor movements are revealed in such tasks as school-related tasks (such as bead stringing, drawing, writing, use of scissors, pasting, tracing, pegboards, puzzles, finger painting, brush painting, modeling objects from clay, coloring within lines, copying, block building) and self-help tasks (such as buttoning, hooking, tying, brushing and combing hair, bathing, brushing teeth, and zippering). Perceptual motor abilities which involve the gross motor movements in addition are activities such as jumping, hopping, running, skipping, and galloping.

Fine Motor Development

Fine motor skills involve the ability to intergrate the movements of fingers, hands and wrists into a purposeful, synchronized pattern.

Developmental concerns in this area include manual dexterity and finger dexterity. Finger dexterity requires rapid, fine movements with the fingers. This development improves during the latter stages of proximo-distal growth. Often times a child's finger dexterity can be evaluated under informal observational conditions. Cratty (1967), however, suggests specific evaluation tasks, including:

(1) finger opposition tasks, where the child is asked to touch each of his four fingers with his thumb. In general, a 6 year old can do this quite well, even with both hands simultaneously.
(2) Placing matchsticks in a matchbox under timed conditions, a task which most 4-5 year olds can perform easily, according to Cratty (1967).

Manual dexterity is the ability to make rapid, but skillful and controlled arm and hand movements. It is not a uni-dimensional attribute, (Cratty, 1967), but is composed of several sub-skills including finger dexterity, steadiness, and eye-hand coordination. As such, discussion of this ability necessitates knowledgeability of these three areas. The reader is thus referred to the sections discussing finger dexterity, steadiness, and eye-hand coordination.

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Fine Motor Development: Manual Dexterity

Age in months	Stage	Appropriate Equipment	Alternative
1	Hands predominantly fisted (W&L). Hand clenches rattle placed in palm, but does not retain.	Rattle	Spoon
1-5	Manipulates red ring (Bayley).	Rattle; mobile	Ring
2-7	Manipulates table edge (Bayley). Ulnapalmar prehension (Bayley), (no thumb).	Cube/ring	
3	Hands are open or loosely fisted (Reflexive Palmer Grasp).	Rattle	
3-7	Retains 2 cubes in hand (Bayley).	Cubes	
3-9	Grasps rattle (Denver).	Mobile over bed.	
4	Holds rattle actively. Grasps cube on contact. Grasps ring when it is held near his hand.	Tube rattle	Mobile over bed.
4-8	Partial radial-palmar prehension (Bayley).	Rattle	Spoon
4-10	Retains 2 of 3 cubes offered (Bayley).	Cubes	Thread spools
5	May transfer object from hand to hand (Cattell).	Baby shapes	Spoon
5.0-5.8	Rakes raisin.	Cereal	Cereal
5-14	Tries to secure 3 cubes (Bayley).	Cubes	Spoon

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Fine Motor Development: Manual Dexterity

Age in months	Stage	Appropriate Equipment	Alternative
6	Makes a bilateral prehensory approach on object on test table. Begins to exploit objects by shaking, hitting, etc. Also drops and throws objects (Cratty, 1970).	Rag doll	Cup
7	Makes direct approach on pellet, but hand comes within vicinity of pellet and rakes. Varies activity according to size and amount of material. Alternation of prehension and manipulation which may result in transfer.	Raisin	Rattle
8	Holds one cube and manipulates another.	Design cubes	Thread spools
10	Drops cube with clumsy or exaggerated release (W&L). Picks up cube and releases in vicinity of another.	Design cubes	Thread spools
12	Grasps in one hand, transfers to other and manipulates. Releases cube adaptively. Good grasp and release are present.	Design cubes	Thread spools
12-18	Lifts and holds cup between 2 hands (LDS).	Cup	Cup
18-24	Holds small glass with one hand as he drinks (LDS).	Paper cup	
24	Overgrasps and over-releases.	Jumbo pegs	Buttons

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Fine Motor Development: Manual Dexterity

Age in months	Stage	Appropriate Equipment	Alternative
54	Manipulates wash cloth easily and efficiently.	Napkin	

Fine Motor Development: Finger Dexterity

Age in months	Stage	Appropriate Equipment	Alternative
1-6	Fingers hand in play (Bayley).		
4	Manipulates fingers (Cattell).	Mobile	
6-9	Grasps objects with fingers. (Cratty).	Baby shapes	Spools
6-12	Fingers hold in pegboard. (Bayley).	Mobile	Spools
8	Secures pellets (Cattell).	Cubes	
8-18	Turns pages of book (Bayley).	Picture book	
9	Scissor grasp of pellet (Cattell).		
10	Plucks pellet easily with thumb and index finger (W&L). Index finger approach (W&L).	Cubes	Spoon
11	Manipulates boxes and stones (Cattell).	Baby shapes	Pots & pans with lids
12	Probes holes and grooves, and points at pellet in bottle. Puts one or more cubes in a cup (Cattell). Unwraps a cube covered with a piece of tissue or cloth (Bayley).		
13	Neat pincer grasp of pellet (W&L).		
15	Puts beads in a box (Cattell). Puts ten cubes in a cup (Cattell). Picks up small items on sight with pincer grasp	Cubes	Buttons in a cup

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Fine Motor Development: Finger Dexterity

Age in months	Stage	Approrpriate Equipment	Alternative
15 (cont'd.)	(LDS). Puts pellets in bottle (W&L).		
18	Turns page of book 2-3 at once (Bayley).		
24	Turns pages of a book one at a time. (W&L). (Strings three one-inch beads).	One inch beads and string	Shoe string and thread spools
24-28	Unbuttons land buttons side and front (LDS).	Montessori large buttoning frame.	Homemade buttoning frame.
36	Hand tremor when fine coordination is required. Holds crayon with fingers appropriately (W&L).	Montessori hook and eye frame.	Dressing self.
42	Manipulates most tiny objects with ease.	Connect small plastic cubes.	Sorting buttons; gadget painting.
48-60	Lace shoes (LDS).	Montessor tying frame.	Stringing macaroni noodles or styrofoam scraps
54	Builds or puts things together requiring small muscles; i.e.g., tinker-toys, Lincoln Logs, Lego or similar. Manipulates wash cloth easily and efficiently. FM.		
	Builds or puts things together requiring small muscles; i.e., tinkertoys, Lincoln Logs.	Magnetic toy pieces.	Blocks; gluing wood scraps & other raw materials.
60	Can imitate examiner's tying of piece of string around		String painting; painting with quetips.

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Fine Motor Development: Finger Dexterity

Age in months	Stage	Appropriate Equipment	Alternative
60 (cont'd.)	pencil (S-B). Can roll head on a spool (OT). Can put 20 matches in a box, one by one, 10 with each hand (OT).		
72	Handles and attempts to utilize tools and material.	Woodworking; child size loom.	Painting (water color tempra).
84	Manipulation of tools is somewhat more tense, but there is more persistense.	Woodworking; child size loom	Painting (watercolor tempra) weaving, qluing wood scraps and other raw materials.
96	Likely to be a gap between what he wants to do with his hands and what he can do. Can touch thumb to all fingers of same hand ((T).	Building sets of small blocks.	woodworking

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Visual-Fine Motor Development

Visual fine motor development involves the ability to coordinate movements of the body with vision. Perceptual judgments which hands make and the accuracy with which hands and fingers move are inseparable. This area of development is also affected by the proximo-distal growth in motor movements.

Development concerns in this area include coordination of eye-hand movements, precision of eye-hand movements and steadiness. Tasks which involve coordination between eye and hand are said to require eye-hand coordination. Ability in this area is revealed in such school related tasks as bead stringing, drawing, writing, use of scissors, pasting, tracing, pegboards, puzzles, finger painting, brush painting, modeling objects from clay, coloring within lines, copying, block building, and self-help tasks such as buttoning, hooking, tying, brushing and combing hair, bathing, brushing teeth, and zippering. In general, there are four phases of development in eye-hand coordination (Cratty, 1970). The first phase is that of object and hand regard. A child's use of his hands will emerge only after such observation, along with random hand-arm movements has accurred. Interestingly enough, White and Helf (1964) have found that children who were not given much attention (handling) began to regard their hands earlier than an experimental group who received much handling and stimulation. The second phase in the development of eye-hand coordination is that of general motor excitation then confronted with an object, with no attempt to contact it. Such motor excitation is usually revealed in vertical arm movements (either alternately, separately, or together) and occurs somewhere between two and four months. Contact and manipulation is the third phase often beginning in the early part of the fourth month. It is during this stage that children begin to examine and exploit objects. The latter stage, occuring after 6 months, involves exploitation of objects. Such exploitation is seen in the excessive amount of shaking, hitting, tearing, pulling, squeezing, rubbing, pushing, etc. of all objects. The child in this stage also begins to drop and throw objects, exploring the many ways such objects land on various surfaces. Somewhere around eleven months, still in the exploitation stage, he uses objects to make social contact. The ability to handle small objects and to transfer them precisely from place to place is referred to as precision of eye-hand movements. This ability involves a very specific eye-hand movement. It differs from finger dexterity in that it is measuring the speed of eye-hand coordination, (and is thus dependent on eye-hand coordination).

Steadiness is the ability to aim the hands and fingers with precision. This ability involves eye-hand coordination but with the additional factor of steadiness. It is related to strength, level of tension, and emotionality. For example, the game of "pick-up-sticks" requires eye-hand coordination, precision and a steady hand which will allow the child to pick up one stick without moving any others. It is obviously a higher level of visual motor development, underlying such skills as handwirting and typewriting.

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Visual-Fine Motor Development: Coordination of Eye-Hand Movements

Age in months	Stage	Appropriate Equipment	Alternative
0-3	Accurate swiping of object when he sees it (White, et.al.).	Design cubes	Spoon
3-4	Alternates glances from object to hand (White, et.al.).	Tube rattler	Spoon
4-6	Carries ring to mouth (Bayley).	Tube rattle	Rattle
3.9-5.0	Reaches for object (Denver).	Mobile	Homemade mobile.
3-4	Clasps hands at midline while glancing at object (White, et.al.).		
	Glances at rattle in hand when it moves.	Tube rattle	Rattle
5-7	Picks up cube (Bayley), although crudely (White, et.al.).	Design cube	Thread spool
	Can retain a toy in hand, with occasional regard. Regards toy in hand and takes to mouth (W&L).	Doll	Rattle
4.9-8.8	Feeds self a cracker (D)	Cracker	Cracker
5	Picks up spoon (Cattell).	Spoon	Spoon
6	Regards handle of cup, and may approach it but not prehend it. Releases regard to surroundings, while he bangs or mouths a toy.	Cup/baby shapes	Cup/rattle
7-12.3	Bangs 2 cubes (Denver).	Design cube	Small block
8	Pushes one cube with another. Feeds self a cracker.	Pushing toy	

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Visual-Fine Motor Development: Coordination of Eye-Hand Movements

Age in months	Stage	Appropriate Equipment	Alternative
9-18	Puts 3 or more cubes in cup (Bayley).		
11	Pulls ring by string to appropriate distance for grasp. Also dangles a ring by the string (Bayley).	Twirling mobile	Keys on chain.
11-20	Puts 9 cubes in cup (Bayley).		
11.9-24.1	Scribbles spontaneously (Denver).	Crayons	Crayons
12	Marks with pencil (Cattell).		
13	Can put peg in pegboard (Cattell).	Jimbo pegs & boards	Buttons in egg cartons.
13.3-23.5	Uses spoon (O).		
15	Frequently holds object up near eyes or out at arm's length. Closes round box (Cattell). Puts 6 cubes in and out of cube (W&L).	Doll	Doll
15.8	Scribbles spontaneously (D).	Water color markers	Crayons
18	Picks up tiny pellet and places in a bottle with demonstration. Places round and square blocks in formboard. (Bayley).		Buttons in egg carton.
20.1-36	Dons shoes (Denver).		
21	Puts large pegs in a peg-board. Covers square box (Cattell).	Jumbo pegs	
24	Strings 3-1" beads. Beginning	Plastic beads. Montessori	Strings thread

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Visual-Fine Motor Development: Coordination of Eye-Hand Movements

Age in months	Stage	Appropriate Equipment	Alternative
24 (cont'd).	to screw toys, and to turn doorknob. Attempts to fold paper (Cattell). Placed geometric shapes into 3-hole form board.	locking frame. Foam shapes.	spool on shoe.
27	Imitates crayon strokes, both vertical and horizontal, from examples. Folds a piece of paper once after demonstration.		
30	Can solve 2 piece puzzles (McCarthy). Copies vertical lines (Beery). (Denver).		
36	Strings 4 or more beads in two minutes (Cattell). Can string beads of 3 shapes in any codes. Confines painting to own paper. Cuts with scissors functionally but not necessarily easily or correctly. Places tiny pellets into a bottle (ten in thirty seconds). Can solve 3 piece puzzles. (McCarthy).	Build bead patterns Easel painting Puzzles (knob size and shape)	Painting/ gluing
48	Easily uses scissors but does not necessarily follow lines. Puts 20 coins in a box (OT).		Coins in bank.
54	Solves 4 plus piece puzzles (McCarthy). Generally catches rolled balls.	Puzzles	
60	Can imitate folding of paper into triangular shapes (S-B). Cuts with	Montessori metal inserts Montessori tying frame	Homemade Montessori

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Visual-Fine Motor Development: Coordination of Eye-Hand Movements

Age in months	Stage	Appropriate Equipment	Alternative
60 (cont'd.)	scissors following a line. Attempts shoelace tying although may be unsuccessful. Likes to color within lines, to cut & paste simple things.		tying frame Scissors and paper

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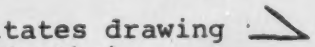
Visual-Fine Motor Development: Precision of Eye-Hand Movements

Age in months	Stage	Appropriate Equipment	Alternative
6-12	Frequently misses paper (LDS) while using crayon.	Crayons, paper (large)	
10-20	Places 1 round block in formboard. (Bayley).	Jumbo pegs.	
10-17	Places 1 peg in pegboard (B).	Jumbo pegs	
12-26	Puts 2 blocks in formboard. (B).	Foam shapes	
13-20	Puts 6 pegs in formboard (B).		
19-30	Imitates vertical or horizontal lines (B).	Montessori metal insets	
36	Imitates drawing a vertical line 1-1/2" (McCarthy).	Montessori metal	
42	Imitates drawing a horizontal line 1-1/2" (McCarthy, B).		
48	Imitates drawing  (McCarthy)		
49 ♂ (42 ♀)	Imitates vertical horizontal cross (Beery). plus (42-Denver).		
49-72	Copies (D).		
51 ♀ 54 ♂	Imitates (McCarthy, Beery).		
55	Draws man in 3 parts. Imitates drawing (McCarthy).		
58-59	Copies oblique cross X (B).		
63	Imitates triangle (Beery). 66-68 (LDS).		

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Visual-Fine Motor Development: Precision of Eye-Hand Movements

Age in months	Stage	Appropriate Equipment	Alternative
61-66	Copies open square and circle (Beery).		
66	Imitates drawing (McCarthy).		
72	Imitates drawing (McCarthy). (W&L).		
77	Directional drawing (Beery). (68-69 LDS).		
78	Imitates drawing (MCCarthy).		
84	Trace through 2 mazes (OT). Three-dimensional ring (Beery).		
86 ♂ 89 ♀	Six Circle Triangle (Beery).		
91 ♂ 95 ♀	Circle and T leted square.		
96	Increase in speed and smoothness of eye hand performance.		
97	Verticle diamond (Beery).		
104 ♀ 107 ♂	Tilted triangles (Beery).		
108	To leaf through a book. OT.		
113 0 114 0	Eight dot circle (Beery).		
116 0 120 0	Wertheimer's hexagons (Beery).		
121 0 131 0	Horizontal diamond (Beery).		

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Visual Fine-Motor Development: Steadiness

Age in months	Stage	Appropriate Equipment	Alternative
10-19	Tower of 2 cubes (B).	Design cubes	Wooden blocks
12	Spontaneously bangs on cube on another or places one next to another and, after demonstration attempts to build a tower.	Small colored wooden blocks	Wooden blocks
12-18	Builds tower of 2-3 cubes (D).		Wooden blocks
15.5-26	Tower of 4 cubes (D).	Design Cubes	
17-30	Tower of 6 cubes (B).		
21-39	Tower of 8 cubes (D).	Montessori pink tower.	Wooden blocks
30	Builds bridge with cubes (Cattell).	Design Cubes	
36	Builds chair with cubes (McCarthy).	Design cubes	Wooden blocks
42	Makes building with cubes (McCarthy)	Montessori brown steps	Wooden blocks
48	Builds house with blocks (McCarthy). Tends to combine cube-block structures in symmetrical form.	Blocks; Lincoln logs	Wooden blocks
108	Cuts out a circle (OT).	Scissors, paper	

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Locomotor Skills

Locomotor skills involve perceptual motor abilities which are primarily designed to transport the body through space. The most fundamental of the locomotor skills develops with the young child's ability to navigate in a prone position by the use of creeping and crawling. Probably no other neuro-muscular function of the growing infant exhibits so much individual variability (McGraw, 1945). In general, the infant progresses from relatively random flexion and extension of the arms and legs, to a rhythmic swaying motion, and then to the more mature crawling with arms and legs in opposition (simultaneous right arm and left leg forward, etc.).

The assumption of an erect posture is probably the key to the child's ultimate development of a variety of locomotor skills. The attainment of upright locomotor skills is limited by two basic prerequisites:

(1) the ability to maintain the body in a balanced, upright position
(2) sufficient strength and flexibility to propel the body forward by alternate movements of the lower extremities

As the child's locomotor skills continue to develop, a third characteristic becomes quite apparent: the coordination of the arms and legs in a synchronized fashion. Coordinated movements are balanced and effectively timed functions of the entire body, and are most represented by the concept of symmetry implicit in the use of both sides of the body. This characteristic of symmetry is displayed in many actions where the movement is bilateral (as in the forward roll), or where the limbs move alternately and in an oppositional pattern (as in mature walking or running).

The specific rhythm of the movement is also a fundamental component of all perceptual-motor skills, but especially of locomotor movements. In general, locomotor movements have been divided into two groups (even and uneven) based on the nature of the underlying rhythm. Even locomotor skills (2/4 or 4/4 time) consist of the walk, run, leap, hop, and jump. The uneven locomotor skills (3/4 or 6/8 time) consist of the skip, gallop and slide. Following is a brief description of the locomotor skills. It is of particular interest to note that the uneven locomotor movements have identical rhythmic patterns, yet each of the three movements is recognizable as a unique pattern. All three of the uneven patterns are generally accomplished between the ages of 2-5 and usually in a specific sequence (gallop, slide, skip).

Walk - the transfer of weight from one foot to the other while moving forward or backward. One foot must always be in contact with the floor. In the mature pattern, the arms and legs are in opposition (right arm swings forward as the left leg steps forward)

Run - the transfer of weight from one foot to the other (as in the walk), with a momentary loss of contact with the floor by both feet at the same time

Leap - The transfer of weight from one foot to the other foot as in the run, but with a more sustained period of flight, greater height and distance. In the mature form, the toe is the last to leave the floor and the first to land.

Hop - the transfer of weight from one foot to the same foot. In the mature form, the toe is the last to leave the

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floor and the first to contact it again on the downward flight.

Jump - the transfer of weight from one or both feet with a landing on both feet

Gallop -moving in a forward direction with the same foot in front, in a step-close fashion

Slide -moving in a sideward direction with the same foot always moving in the desired direction first. The weight is always transferred from the lead foot to the closing foot.

Skip - moving forward with a combination of long step-hop patterns which alternate the lead foot.

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Locomotor Skills

Age in months	Stage	Appropriate Equipment	Alternative
5-11	Prewalking progression (Bayley).		
5-12	Crawls rapidly on all fours (LDS). Stepping movements (Bayley). Walks with one or both hands held (LDS). (Bayley).		
6	Travels by rolling, scooting, or creeping (T)		Baby walker or Baby bouncer.
6-15	Can creep up flight of 3 stairs (LDS). (W&L).	Loft	Large blocks, steps
7.3-12.7	Walks holding onto furniture (Denver).		
9-17	Walks alone (Bayley), (Corbin), (9-17 Bayley). (Seldom falling - 18 mos. W&L).		
11.3-14.3	Walks well (Denver).		
11.8-15	Walks without support (Denver summary of Gesell, Cattell, Bayley, Guffiths, Helzwolf, Yale).		Riding Toys
11-20	Walks sideways (Bayley) (12-18 LDS).	Loft	
12.4-21.5	Walks backwards (Denver) (11-20 Bayley).		
12-15	Walks around room unattended with support (MT). (W&L).		
12-18	When walking, turns around		

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Age in months	Stage	Appropriate Equipment	Alternative
12-18 (cont'd.)	poorly with circular path (LDS).		
	Climbs forward into adult chair, then turns around and sits down (LDS). (18-W&L).		Chairs and other furniture; rocking chair; rocking horse obstacles - blocks, hollow barrels, cartons.
	Can move homologous and alternate (LDS).		
	Runs stifly, upright, with eyes focused on ground, can't go around obstacles (LDS).		
	Can carry large doll or teddy bear while walking (LDS).		Push and pull toys; housekeeping equipment.
12-24	Pushes and pulls toy around floor while walking (LDS).	Large truck	
13-23	Walks down stairs with help (Bayley).	Loft	
14.0-22.0	Walks up steps (Denver) (with help 12-23, Bayley).	Loft	Provide railing or support during initial stages.
17	Steps off an elevation preliminary jump) (HR&C).		
17-30	Jumps with both feet (Bayley).		
18	Momentary suspension when steps (jump) down steps (HR&C).		

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Locomotor Skills

Age in months	Stage	Appropriate Equipment	Alternative
18-20	Walking stabilizes at 170 steps/min. (Corbin).		Provide increasing greater increments between steps as skill progresses.
18-30	Walks upstairs alone - makes time (Bayley). Walks on a line (Bayley).		
18-24	Climbs on furniture to look out window and can get down again (LDS).		
19-36	Jumps from bottom step (Bayley). (W&L) (LDS).		Climbing boxes; blocks; stairs; monkey bars; climbing tree.
20.5-36	Jumps in place (Denver). Runs safely and can stop and start easily and a-void objects (LDS).		Obstacle courses; circuits to run.
21-30	Jumps from second step (Bayley).		Slide
21	Runs well with only oc-casional falling (MS).		
22-30	Distance jump 4-14: (Bayley).		
23-30	Walks entire length of line (Bayley).		
24	Runs well, no falling (W&L). Jump from 12" height (M&W).		

00165

Age in months	Stage	Appropriate Equipment	Alternative
24 (cont'd).	Walks up and down stairs with railing with both feet on same step (MT, W&L).	Loft	Climbing boxes; stairs or blocks which can be arranged as stairs.
24-36	Walks on slightly elevated board (Bayley) (Denver) (LDS).		
	Walks on 6' board with one foot on ground & one on board.	Balance beam	Plank curbing
	Gallops (Sinclair) (LDS).	Hobby horse, broom stick horse.	
	Broad Jump (Denver) (LDS).		
25-30	Distance jump 12-24" (Bayley).		Mat or sand to jump onto. Lines or grid on floor.
26-36	Walk on tiptoes (Bayley) (Berry).		
27	Jump from height of 30 cm. (Bayley).		
28	Jumps off floor with both feet (Bayley).		
28-30	Distance jump 24-30" (Bayley) (Denver).		
30	Jumps four or more times on bouncing board (Sinclair).	Jump rope; bouncing board	
30-50	Walks down stairs alternating feet (Berry). (Bayley) (W&L).		Rug; mat
30	Learns forward roll and with a minimum of instruction (Sinclair).		

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Locomotor Skills

Age in months	Stage	Appropriate Equipment	Alternative
31	Jumps from 18" height one foot (M&W).		
32	Jumps from chair (Berry). (Bayley).		
33-36	Jumps from 8" elevation (CDP). (M(W), with both feet.		
35-66	Backward heel to toe walk (Denver).		
36	Walks up stairs, one foot per step, holding rail (MT). Alternates feet going upstairs (W&L). Climbs over objects and obstacles such as furniture.	Loft	
36-48	Walks up and down stairs alternating feet (LDS). Walks on 6' board with alternate feet with one to three steps off (LDS). From run makes broad jump more than 23" (LDS). Skips on one foot (Gallop) (LDS). (CDP).	Loft	
36-57	Hops (Denver).		Boxes, hoops, tires to hop into and onto. Obstacles or areas marked on floor.
37	Jumps from 18" height; both feet (M&W).		
37.1	Jumps from 30 cm. height; both feet (Bayley).		

Age in months	Stage	Appropriate Equipment	Alternative
37-48	Distance jumped 10-35 cm. (Berry). (Bayley).		
38	Jumps 36-60 cm. (Corbin). "Hops" on 2 feet 1-3 times (M&W) (Wellman).		
39	Walks down stairs using rail, one foot per step (MT).		
39-60	Heel to toe walk (Denver).	Walking board; balance beam.	
40-45	Climbs stairs one foot per step without rail (MT).	Monkey bars; climbing towers	
41-72	Jumps over rope 20 cm. high (Berry). (Bayley).		
42	Walks up and down stairs, no rail both feet to same step (MT).	Loft	
43	Hop on one foot 1-3 times (Bayley). (Wellman).		
46-55	1-10 consecutive hops (Corbin) (Wellman).		
48	Hops in same place with feet together 7 times (OT). Fundamental side to preferred side (Sinclair). Climbs ladder foot over foot with opposition (Sinclair). Jumps 60-85 c,. (Corbin). Running broad jump 23-33" (Corbin) (CDP).	Hopscotch game. Rope ladder, jungle gym, climbing tower, cargo net, rope with knots to climb.	

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Locomotor Skills

Age in months	Stage	Appropriate Equipment	Alternative
48-60	Runs 35 yards in less than 10 seconds (LDS). Walks in full length of 6 cm. board (LDS). From running start, vertical jump of 2-1/2-3' (LDS). Skips alternating feet (LDS) (60, W&L).	Jump rope; string; obstacles; tires.	
		Jump rope	Jump rope.
48	Jumps 2 inches high from couch (CDP).		
49	Hops on one foot less than 2 meters (LDS) (Bayley).		
50-60	Hop on one foot further than 2 meters (LDS) (Bayley).		
54	Walks with one foot directly behind the other. Gallops well (E&E) Can slide in either direction.		
60	Skips with both feet alternately and smoothly (CDP). Well developed forward roll. (Sinclair).		
48-60	Runs up and down stairs alternating feet (LDS). Ruhs 35 yards in less than 9 seconds (LDS).		
54	Walks up and down stairs, one foot per step, without rail support (MT). Walks with one foot directly behind the other (MT).	Balance beam	Stilts
60	Can walk a distance on tiptoes (CDP) 81% of children proficient		

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Age in months	Stage	Appropriate Equipment	Alternative
60 (cont'd.)	at jumping (Gutteridge). Running broad jump (28-35") (Corbin). Vertical jump and reach 2-1/2" (Corbin). Hops on one foot for a distance of 5 meters (OT). Hops 50' in 10 seconds. (Keogh).		
60-72	Walks full length of 4" board (LDS). Runs 35 yards in less than 9 seconds (LDS). From run makes broad jump less than 40" and vertical 23-1/2 (LDS). Hops on one foot 50' in 9 seconds (LDS). Learns to roller skate and/ or ice skate if given an opportunity (E&E). Learns to use pogo stick or stilts. Learns to use bongo board if given an opportunity.	Roller skates; ice skates. Pogo stick; stilts; balance board; bongo board; stabilo meter.	
66	Run Figure-8 course with good balance (Sinclair).		
70	Runs 30 yard dash in 6.7 seconds (Kirchner).		
72	Runs 30 yard dash in less than 6.6 seconds (Kirchner). Standing broad jump 37.5 inches (Kirchner). Hops 50' in 10 seconds (Keogh).		
72-84	Hops on either foot at will, does not alternate side symmetrically (Purdue).		

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Locomotor Skills

Age in months	Stage	Appropriate Equipment	Alternative
84	Runs 30 yard dash in 6.1 seconds (Kirchner). Standing broad jump 42.5" (Kirchner). (Keogh). Hops 50' in 5-7 seconds (Keogh).		
96	Standing broad jump 45.5 (Kirchner). Hops 50' in 5.7-6 seconds (Keogh).		
108	Hops 50' in 5.2-6 seconds Keogh.		
108-120	Hops well on either foot and alternates sides symmetrically.		

Purposive Movements

Purposive movement includes all movements which are primarily designed to have an effect on some external object. For example, throwing and catching a ball represent two opposite types of purposive movements: the production of force and the reception of force. Bouncing a ball requires the sequential combination of these two types.

The production of force sufficient to have some effect on an external object or person is a primary accomplishment for children. Not only must the force be sufficient to overcome the resistance, but it must also be controlled in terms of the magnitude of the force and the length of time (duration) of its application. As a child learns to kick or throw a ball to a parent or friend, the problems of overthrowing and underthrowing are obvious.

The absorption or reception of force includes the complex interaction required for maintaining balance (equilibrium) while receiving the impetus or momentum of a moving object. This problem is further complicated by the necessity to absorb the force without allowing the object to rebound from the body or to cause injury. Catching a rubber ball without it rebounding out of the hands is difficult, but more significant are the problems implicit in bouncing on a large board or trampoline, when the child is attempting to propel and control his own body.

Many perceptual elements impinge on the child, who must be able to identify the force of the oncoming object in terms of both its weight and its speed. In addition, many forms of purposive movements are dependent upon the attainment of varying degrees of eye-hand coordination. The eyes must focus on the object to be received or acted upon, and the appropriate body parts must respond to the judgments made through the sensory systems. The following purposive skills require the establishment of eye-hand or eye-foot coordination: catching a ball, striking a ball or tetherball, kicking a ball. These coordinative problems become magnified as the child begins to move through space while executing purposive movements (i.e. running and kicking or catching a ball) or when an implement is added (i.e. baseball bat or crocket mallet).

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Purposive Movement

Age in months	Stage	Appropriate Equipment	Potential Hazardous Conditions
6-12	Rolls, projects or flings balls underhand, sidearm or overhand (LDS).	A variety of sizes & shapes of balls with a variety of colors & textures.	Begin with large sized balls & progress to smaller sizes.
9.8	Attempts to "play ball" with adult (Denver).		Begin with soft objects, i.e. fleece balls or soft rubber.
9-18	Throws ball (Bayley).		
15-24	Kicks ball forward (Bayley) (Denver) (MIT).	Large, soft rubber balls.	Allow kicking in a clear, open area.
18-24	Kicks ball without overbalancing (LDS). (Gessell) (W&L).		
24	Throws large ball (accuracy not required) (MIT). Tosses tennis ball forward (CDP).	Punching type toy or punching bag.	
27	Bounces 9-1/2" ball 1-3 ft. with one hand (E&E).		
24-36	Catches a large tossed ball with arms extended (LDS) (Wellman).	Large, soft balls.	Face, head, & finger injury if hard object utilized.
30	Should catch 2 of 3 well thrown balls (Sinclair).		
21-36	Pedals tricycle (Denver) (MT)	Tricycle	Be sure tricycle is correct size-seat, pedal, handlebars;

Age in months	Stage	Appropriate Equipment	Potential Hazardous Conditions
21-36 cont'd.			Check braking and steering systems.
24-36	Overhand throw with extension of forearm only (WILd).	Simple rolling & throwing games; Targets to throw at Bowling ball & pins; ten pins.	
30	Strikes ball with bat off a batting tee (Sinclair).	Bat. Batting tee. Tether ball (Ball suspended by rope for striking)	Rubber or plastic bats to avoid severe injury.
33-36	Throws eight to ten inch ball 6-7 ft. (CDP) (Wellman)		
33	Throws ball without losing balance (LDS)	Bowling ball & pins; ten pins.	
36	Rides tricycle using pedals (OT)	Tricycle	
36-48	Can bounce & catch ball with both hands (LDS).	A variety of sizes & shapes of balls.	
40	Bounces a ball 1-5 ft. (E&E).		
42	Bounces a small ball with one hand (Sinclair). Overhand throws with some body rotation & greater arm range (Wild).		
46	Bounces a large ball with 2 hands at least 4-5 ft. (E&E).		

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Age in months	Stage	Appropriate Equipment	Potential Hazardous Conditions
48	Throws tennis ball with overhand throw. (CDP) & (W&L). Bats a large ball (Sinclair).	Paddle with ball attached; crochet set.	Be sure ball is securely attached & made of soft rubber.
41-66	Catches bounced ball.		
48-60	Bounces ball at least 3 times (dribbles) with each hand (LDS).	Basketball Soccerball Rubber ball	
48-72	Learns to ride bicycle.	Bicycle	Be sure to have correct size; check braking & steering systems.
51-68	Catches large ball with elbows flexed. (MT) (Wellman).		
54	Bounces ball at least 4 times (Sinclair).		
57	Catches bounced ball (Denver).		
60	Kicks eight to ten inch ball 8 ft. in air (CDR). Kicks soccer ball 8-11 1/2 ft. (Gesell).		
60-72	Overhand throw non-opposition with forward step (Wild). 70% of children are skilled at ball throwing. (CDR).	Punching bag	

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Purposive Movement

Age in months	Stage	Appropriate Equipment	Potential Hazardous Conditions
60-72 cont'd.	Dribbles ball 10 times with each hand (LDS). Catches ball with consistency.	Baseball glove.	
72	Kicks soccer ball 10-18 ft. (Gesell). Advanced throwing (W&L). To throw ball at a target (1.5 m. away) (OT). Throws small ball 15 ft. (Wellman).		
72-84	Throws 12" ball 20-34 ft. (Keagh).	Badminton game	
78	Overhand throw opposition & rotations added (Wild).	Tennis racket	
84	Kicks soccer ball 15-25 ft. (Jenkins).		
84-96	Throws 12" ball 26-45 ft. (Keagh).		
96	Kicks a box a distance of 5 meters hopping on one foot. (OT).		
96-108	Throws ball 34-60 ft. (Keagh).	Velcro dart game Yard darts.	Pointed darts- Use velcro fabric or similar tips or non-pointed objects.
108	(Boys) Throws a ball at target (2.5 meters away). (OT).	Target throw games.	Pointed darts.

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COGNITIVE DEVELOPMENT

Piaget (1967), attempted to demonstrate the developmental stage by stage progression of the child's thinking. Psychologists and educators (e.g., Hunt, 1961; Flavell, 1963; Ellind, 1964; Almy, 1966) have added research data to Peaget's work making it the most existing complete and systematic developmental theory of cognitive structure.

For the purposes of the Child Development Center curriculum cognitive development has been divided into the areas of classification, seriation, temporal relations and spatial relations. As discussed previously in conjunction with play the cognitive processes by which the child develops cognitive understanding are imitation, exploration, testing, prediction and constructure.

The cognitive development of children becomes apparent in infancy sometime after the first month when they begin to recognize objects and manipulate them. The "toy age", in which play is determined by the type of toys available, begins during this first year of life and reaches a peak between 7 and 8 years. Children maintain interest in toys by imagining they have life-like qualities. How they play with toys, how long they play, and how much they enjoy playing with toys depend partly on their perceptual motor and cognitive development, the toy or object, and the conditions under which they play - whether alone, with an adult, or with another child. Children lose interest in toys as they become more intellectually advanced because they can no longer give toys life-like qualities with this loss of interest occuring earlier in bright children (Levinson, 1961). Children progress through stages of cognitive development in the way they process the information received and in the way they approach and interact with toys.

The following discussion attempts to describe the child's cognitive development from birth to the adult stages of problem solving. In every stage of cognitive development the sequence of classification, seriation, temporal and spatial abilities is evident.

Sensorimotor stage. In the sensorimotor stage of development the child's behavior is determined by reflexive action. In the sensorimotor stage learning is the result of information received through physical explorations and sensory stimulation. At this stage of development; raw experience is assimilated and provides meaning to the child. The child moves from responding to the most dominant stimuli to a stage where he/she is in more control of that to which he/she is attending. The child then proceeds up to a level where there is motor interaction with the environment that can be manually manipulated but not symbolically manipulated. This stage is divided into six substages by Piaget, the most important for language development being the sixth substage. Ability to form mental representation of events is the climax of stage six and the end of infancy. The first signs of conceptual thinking are found in the development of mental images and the symbolic schemas involved in the play of the child at the end of infancy.

Piaget's first stage within the sensorimotor period of development occurs from approximately birth to 1 month. Reflex behavior is assimilated to child's needs and functioning and becomes accomodated to the realities of the situation through grouping trial-and-error processes. The process of play during the first 6 months is primarily exploratory play. The child's play with tongue and lips or hands and fingers seems to provide a pleased relaxed result.

Infants at Stage 1 respond only to stimuli from the environment

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that are related to their own actions which fit innate reflexes. They recognize their mother and bottle.

Piaget's second stage in the sensorimotor period is approximately 2 through 5 months. Reflex processes are progressively integrated in cortical activity. Variations in schema appear, reciprocal coordination among schema occurs and perceptual recognition of objects repeatedly presented takes place.

The child begins to realize objects which can or cannot go into the mouth, can or cannot be grasped and will or will not make noises. At 3 months the child explores toys within reach through sucking, banging, and pulling them (Landreth, 1958). It is at this stage the infant responds to stimuli associated with reflexes, but only if he sees them as associated with his own activity.

The third developmental period of Piaget is approximately 6 through 8 or 9 months. At this stage children become aware of and develop interest in objects outside their own body. They start to explore objects systematically especially by touch and sight. Actions become centered on result produced in external environment; the beginning of intentionality. The exploratory process from 6 to 12 months is evident with smiling and laughter frequently accompanies play with the parent's face and hair. The imitation process is evident at this stage.

Stage four occurs at 8 or 9 months through 11 or 12 months. Heretofore detached behavior patterns, by intention, are coordinated into a single, more complex act to attain an end. Children differentiate means from ends, self from not-self, cause and effect, and time. They become interested in new events they have not caused, even though their interest is limited by familiar schemata. Advanced exploration begins at this time as the child is now mobile and can seek out his environment. Between 8 and 10 months the child can make a smaller container fit into a larger one.

In Piaget's fifth sensorimotor period (beginning of second year), new schemata are established through experimentation, with the child seeking novelty for its own sake. "Inventive intelligence" develops through this experimenting. The child plays simple games with mother such as pat-a-cake, peekaboo, hide and seek (Hurlock, 1964).

At 12-24 months the testing process begins. The child directly seeks to produce novel events. The exploration process continues. There is a great deal of large motor testing: the child crawls over, under and into things; runs; pulls wagons; lifts objects; splashes water; and throws things.

The activity seems to occur for its own sake - there is an exuberance to the pulling, pushing, the creeping into cupboards. The child is saying, "I can do it, and I can do it any way I want," - he is validating his predictions.

The final stage of Piaget's sensorimotor stage usually occurs the latter part of the child's second year. Awareness of relationships emerges, allowing for simple mental combinations and deductions. The bases of deductive or reflective level of intelligence is seen in the prediction of outcomes without empirical testing. Generally the child in the sensorimotor stage must still try things out in concrete, motor ways. A new stage does not abolish patterns of preceding stages but new patterns are superimposed on old ones. It is still a long way from pre-verbal intelligence to operational thought. The child continues to watch movement of others and imitate them.

Preoperational stage. The peroperational series of cognitive development is viewed in two parts, the child approximately 2 to 4

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years of age and the child 4 to 7 years of age. This latter stage is often referred to as the intuitive stage. Sometimes between 2 and 4 years of age, the child begins to develop the ability to have something (a mental symbol, a word, or an object) stand for or represent something else which is not present. It is at this stage that the child is not restricted to acting on things in the immediate environment because the symbolic functions allow him to evoke the past. He employs mental symbols to engage in symbolic play and to use words. The child looks at things, handles them, and acts like them, and in these ways incorporates a great deal of information about them. He classifies objects by sorting them. Once he is proficient at imitation, he begins to imitate internally. This is the essence of mental symbolism. These new cognitive units begin to dominate the child's mental life. Now a piece of clay is treated as if it were a cookie and is fed to a doll, or a block of wood is treated as if it were an automobile. The child can express ideas in words and can understand the communications of others. Thought and language are becoming interrelated.

During the first year of the preoperational stage the exploratory process takes on the characteristics of playful activities that include tasting, scribbling, emptying and filling containers, pushing and pulling objects, climbing into and under small spaces.

From 36 to 48 months exploratory play becomes more integrated with combinations and building. The child arranges, combines, transfers, sorts, and spreads. There is an awareness that objects are toys and that he/she is playing, learning novel manipulations of playthings.

In block building the child handles, carries, and piles blocks in irregular mases; dealing with problems of balance, size, and ways of combining blocks. (Hohnson, 1933; Margolin and Leton, 1961) the child enjoys crashing blocks to the floor, and pushing toys into each other. The so-called destructive play of the three year old is merely a quest for novel effects of objects - he/she will use toys in many ways other than those intended. Destructive play is very closely related to creative play in that all children destroy before they create. They enjoy taking things apart and changing them into something else (Hurlock, 1964). Construction begins when the child attempts to put together the elements of his experience in a self-sufficient fantasy world. The child uses toys and dolls as substitutes for the real thing - although imaginary to the onlooking adult, it is the real thing to the child. Children use characters or imaginary companions like monsters and animals as part of their play. These symbolic playmates let the child experience things not available in reality.

The second part of the preoperational period deals with the child from about four to around seven years of age. At this period the child is preceptually oriented in block building. The child is constructing rows and towers and crude sprawling structures, while at 60 months the child is developing patterns and techniques for building complicated designs and structures (Johnson, 1933; Margolin and Leton, 1961).

Games are played to test skills, the child's interest depending on his motor and intellectual development (Hartley, Frank & Goldstein, 1952).

The child centers on one variable only - usually the variable that stands out visually. He lacks the ability to coordinate variables. His method of measurement is only that of visual comparison. If one of two identical balls of clay is elongated while the child looks on, he thinks that the elongated shape now has more stuff in it and weighs more. The child fails to coordinate the change in length with change

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in thickness.

The child has difficulty with multiple classification, that is, realizing that an object can possess more than one property and thus can belong to the class of pencils, to the class of red objects, to the class of long objects, to the class of writing tools.

The thinking process at the preoperational stage is represented by the child sorting out what he/she sees. This is beginning of forming classes and subclasses. The child also develops notions of space and numbers and how the two are related. Ordering things and events in a series from small to large, short to tall, first to last, or light to heavy.

At 72 months the child is reproducing intricate structures and using them for dramatic play (Johnson, 1933; Margolin and Leton, 1961). After age 6 he uses materials specifically and appropriately for building and constructing and becomes very critical of his creative work, especially drawing and painting (Hurlcock, 1964).

Concrete Operations

During the concrete operations stage the child emerges from egocentricity. This stage occurs at approximately age seven and is considered the end of early childhood. He/she can now distinguish between play and adult reality. Games with rules replace make-believe and imaginative play. The child can focus on several aspects of a situation simultaneously, is sensitive to transformation, and can reverse the direction of his thinking. He forms accurate images of the changes which have taken place. He can also establish which things are the same and not the same and the ability to do something to maintain the identity of an object. These operations are more commonly referred to as conservation. Insert page 19.

The developmental dimension of physical abilities, perceptual abilities, perceptual motor abilities, language and social development, all play a role in the development of the child's cognitive abilities. The child must be allowed to discover the world for himself. It is the child's activity that is the key to full development. What a child experiences for himself leaves a pathway in his mind.

Cognitive Development Outcomes

Classification (Grouping)

Develop ability to make relational discriminations. (get their meaning from one another, e.g., hammer and nail)

Develop ability to make functional discriminations. (because they are used for some activity, e.g., spoon and fork).

Develop descriptive discrimination. (Certain attributes that can be perceived, such as size, shape, etc.)

Develop conceptual discrimination (gross discrimination). (most abstract, e.g., vehicles, furniture, etc.)

Seriation (Ordering)

Develop the ability to deal with the relationship of size. (big, little)

Develop the ability to deal with the relationship of quantity. (more/less)

Develop the ability to deal with the relationship of quality. (rough/smooth)

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Spatial Relations

Develop ability to perceive position in space. (in/out).
Develop ability to perceive direction in space. (to/from).
Develop ability to perceive distance in space. (near/far).

Temporal Relations

Develop concept of time in terms of periods.
Develop concept of time in terms of periods having a beginning and an end.
Develop concept of events in chronological order.
Develop concept that time periods can be variable in length.

The cognitive processes by which the child develops the above understandings include: imitation, copying the acts of another person; exploration; analyzing how things work, what they can do & how they came to be the way they are; testing, seeing if things will have the effects the child thinks they will have; and construction, understanding the world by putting things together his own way.

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Cognitive: Processes

Age in months	Stage	Appropriate Equipment	Alternative
4-8	Becomes aware of and interested in objects outside his own body.		
8-12	Begins to understand cause, effect.		
21	Watches movement of others & begins to imitate.		
42	Represents circles, squares, & triangles in same way--by irregular, closed curve; Aware of the parts of a whole.	Puzzles, classification game, bead pattern cards.	Painted spools, homemade puzzles.
60	Likes to copy simple forms; Copies a triangle; Counts by rote (no idea of cardinal or ordinal number).	Templates Montessori counting box	Buttons in muffin tin
64	Copies simple knot he can see (enclosure).	Rods, stacking nests	Shoe lace in shoe
72	Draws circumscribed figure correctly; Differentiates circle from eclipse; Can copy and reconstruct model in either order, left to right, right to left, or in circular form (space); Refers to physical cause in questioning.	Bead patterns Cube block patterns	
84	Reproduces all the basic Euclidean shapes.		
108	Develops idea of horizontal and vertical plane in space (memory).		

Seriation. The concept of seriation has to do with the relationships of objects to each other in terms of size, quantity, and quality. To seriate is to make two or more comparisons and to order items along some dimension. Before the child can order a group of objects he must first consider a common characteristic of the objects within the set and then compare different magnitueds (size, quantity, or quality) of that characteristic.

The ability to order is basic to the concept of ordinal numbers and to a rational use of the counting process. The main purpose for providing ordering activities is to give the child an understanding of how the sec of counting numbers is constructed.

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Cognition: Seriation

Age in months	Stage	Appropriate Equipment	Alternative
8-10	Makes smaller container fit in larger (precursor of class	Nesting cups	Boxes, pans, fitting cups.
48	Method of measurement is only that of visual comparisons;	Montessori number rods	
	Understands order (of objects) if he can check constantly with a model opposite him (space).	Bead patterns	Make patterns from various cereal types
54	Arranges objects by height (ordination).	Montessori pink tower	Boxes, jars
60	Uses words expressing absolutes - "a lot," "little"; Has partial understanding of continuity and infinity, but can divide lines only to certain point or make smaller representations of shapes (continuity and infinity); Bases differentiation on the number of angles; Uses hands as measurement instrument, often incorrectly.		
66	Arranges two sets in increasing size and matches the two (one-to-one correspondence) by trial and error (ordinal correspondence); Begins to understand equivalence of sets; Begins to distinguish between different points of view in representing shape of objects.	Mathematic balance scale	Arrange objects in duplicate & reverse orders (fork, spoon, knife)
72	Orders or seriates by trial	Montessori brown stairs	Seriate blocks

Age in months	Stage	Appropriate Equipment	Alternative
72 cont'd.	and error;		into steps-put concrete objects on steps (various toys)
	Uses body as measurement instrument; Begins to realize transitive property of equal relations (number of smaller shapes can together equal the area of a single larger shape).	Child size ruler	
78	Numbers start to become meaningful; can conserve number; Realizes invariance of wholes and subsets within a set with their inclusive and additive properties; Establishes projective geometry (has perspective of an object from different positions or points of view); Begins to understand ordination and cardination; Can divide into 3 equal parts.	Montessori number box	Make one-to-one correspondences then change shape or position
84	Starts to use objects for measurement often incorrectly; Rejects visual impression of appearance by reversing operation to original position (pencils); Masters one-to-one correspondence and equivalence of sets (reversibility);	Ruler	
	Orders or seriates with understanding of inclusive relations:		Child disassembles pattern & reconstructs it. Child completes the pattern.

Age in months	Stage	Appropriate Equipment	Alternative
84 (cont'd.)	Begins to use words that express mathematical relations between objects -- more, less, shorter, taller, heavier, lighter; Uses trial and error approach to dividing an object into fourths, or sixths; Uses end view to sight and project a straight line (representational rather than perceptual); Decline of egocentrism; Masters reversibility (free form perception); Makes quantities equal by addition and subtraction; Begins to understand multiplicative relationship between sets;	Montessori number rods	Disassembling objects into smaller parts reassembling to or original shape
90	Understands additive composition of sets; Constructs idea of number; Begins to make hierarchial classifications based upon inclusion; Orders double series (ordinal correspondence;) Realizes ordinal number relationship remains constant if sets spaced differently; Has increasing introspective ability; Immediately recognizes without testing; the transitive qualities of shapes; Notes general shape changes in objects from different perspectives;		
96	Achieves linear measurements; Begins to conserve interior volume, (ex., Volume inside a house); Uses deductive logic		

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Age in months	Stage	Appropriate Equipment	Alternative
	of transivity to solve problems (if a=b b=c then a=c		
102	Portrays quantitative changes that take place; Begins to abstract the commutative and associative properties of addition.		
108	Measurement becomes intellectual operation; two new operations of logic develop (a) subdivision of objects and (b) substitution; Begins to establish correct intervals or distances between objects by measurement (established by 11th year); Can reduce scale or proportion; Understands succession and duration involving two motions.		

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Temporal relations. These are the relations among actions and events defined according to one's perception of his/her positions in time.

There are three basic understandings of time that occur during Early Childhood. The first of these is that there is a beginning and end of time intervals (i.e., nursery school begins and ends each day); Secondly, that events are ordered - first we wash our hands before we can have a snack, and finally there are different lengths of time within time periods (i.e.-you can play outside a longer time after dinner since the sun is up longer in the summer).

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Cognitive: Temporal

Age in months	Stage	Appropriate Equipment	Alternative
8-12	Begins to understand time.		
84	Begins to understand physical time; Develops workable concepts of calendar time.		
90	Has sense of the existence of a general uniform time which is independent of the speed or distance covered by a particular moving object.		
108	Conservation of time achieved.		

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Spatial relations. Spatial relations has to do with the orientation of the child's body to the environment and orientation of other objects in space. The development of body awareness (see under perceptual abilities) plays an important role in spatial relations. Concepts of position in space are the basis of this area. The types of positions most frequently used by children are identified under Positional Concepts in the Semantic section of this book. It becomes the learning facilitator's responsibility to provide experiences where children can find themselves in various spatial positions.

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Cognitive: Spatial

Age in months	Stage	Appropriate Equipment	Alternative
12-13	Expresses sense of "down" and "up" by wiggling and gestures.		
18	Builds tower of 2-3 cubes.	Blocks	Boxes of different sizes.
21	Builds tower of 5-6 cubes.	Blocks	
24	Has horizontal orientation, spontaneous horizontal strokes; Places cubes & cars in horizontal row.	Paper, crayons, blocks train	
36	Confines painting to own paper; Matches side of blocks to hole in formboard and adapts to reversal of board; Distinguishes between open and closed figures --concepts are topological; Builds ability to organize sensory impressions.	Pegs & peg boards, puzzles	
48	Distinguishes a straight line from a curved one, but cannot form a line even parallel to straight edge (has to touch) nor differentiate between polygons; Tends to combine cube block structure in symmetrical form; Draws with a few details or most important detail enlarged; Begins to make straight lines in drawings--tables, houses, squares, etc. Uses only the topological concepts of proximity and enclosure in reproducing a simple map.	Montessori metal insets Montessori solid cylinders Paints, waterbase markers	Chalk & chalkboard Crayons

Cognitive: Spatial

Age in months	Stage	Appropriate Equipment	Alternative
54	Makes a straight line of objects only when placed near model of a line and objects are close together (perceptual view); Can halve for regular or small scale areas; Divides object into 2 equal parts.		
60	Likes to color within lines, to cut and paste simple things, but not adept at this.	Montessori metal insets	
72	Draws a picture of position of object which they can refer to (memory).	Paints, crayons, water base markers.	
84	Begins to coordinate metal image of the world; Understands topological relationships of human figures (body parts in proper places); Spatial relationships of single objects are well developed; Begins to conceptualize the horizontal and vertical plane.		
96	Reflects perspective, proportion, and distance in drawing.		
102	Has mental representation of vertical and horizontal lines.		

Classification. Classifying consists of observing some attribute that is common to certain members of a collection and then grouping them by that attribute.

This ability is basic to the understanding of cardinal numbers.

All objects or events are multidimensional - so the child could classify on several attributes with any given group of objects. The number of ways the child can classify is indicative of the number of schema category he has and whenever he/she is more convergent or divergent.

00193

Cognitive: Classification

Age in months	Stage	Appropriate Equipment	Alternative
0-1	Recognizes mother and bottle (first level of memory--classification).		
3	Anticipates feeding (Cattell, 1960).		
3-4	Begins to realize objects which can (cannot) be grasped, and will (will not) make noises when shaken.	Rattle	Car keys
4	Increases activity at the sight of a toy (supine) (Cattell, 1960).		
6-8	Starts to explore objects systematically, especially by sight and touch.	Rubber toy, rag doll	Texture ball
7	Pats mirror and smiles (Cattel, 1960).		
10	Uncovers hidden toy (Cattell, 1960).	Cube under a cup	
11	Places cube in or over cup (Cattell, 1960); Secures cube under cup (Cattell, 1960).		
12	Imitates beating spoon (Cattell, 1960); Hits doll in imitation (Cattell, 1960).	Rubber toy	Texture ball
13	Frustrated when can't remove object from glass container (Cattell, 1960;) Unwraps cube (Cattell, 1960); Opens box (Cattell, 1960).	Nesting box	Stacking ring

60194

Cognitive: Classification

Age in months	Stage	Appropriate Equipment	Alternative
19	Commands or requests two objects (Cattell, 1960); Selects box containing toy (Cattell, 1960).	Jack-in-the-box	
21	Classifies objects based on certain properties	Stacking discs	Putting away material
24	Identifies objects by use (Terman, 1960); Begins to understand symbolic representation for objects; Scribbles with no purpose or aim. Gives description of 5 items about 4 objects after being coached along 10 dimensions on a trial object (McCarthy, 196).	Housekeeping dishes Cooking utensils Water base markers, paper, books	Getting materials to work with. Crayons, paper, books
		Ragdoll	Body parts
	Selects one of four response pictures according to its conceptual similarity to a stimulus picture (structural rather than functional) (McCarthy, (196); Relates concepts presented visually (associates pictures) "What goes with this?" (McCarthy, (196).	Classification pictures	Books
	Begins to classify by sorting.	Colored blocks, pegs, cubes	Crayons buttons
30-60	Sorts first by shape, then by color, last by size.	Colored foam shapes	Blocks
36	Indicates, by pointing to one of 4 objects, which is different from the others	Same & different pictures	

00195

Cognitive: Classification

Age in months	Stage	Appropriate Equipment	Alternative
36 (cont'd.)	(Terman, 1960; Discriminates between geometric shapes (Terman, 196); Sorts 20 objects according to color (Terman, 1960); Responds to questions requiring general comprehension "What must you do when you are thirsty?" (Terman, 1960);	Colored foam shapes Shapes puzzles Montessori color sorter	Finding round objects Sort buttons by color
	Names 2 animals (Wechsler, 1967);	Animal books, puzzles, and pictures	Stuffed animals
	Responds to pictures "Tell all about" (Terman, 1960);		
	Responds to questions requiring an understanding of cause and effect relationships "Why shouldn't you play with matches?" (Wechsler, 1967).	Storybooks and pictures showing emotion	
48	Responds to questions requiring general comprehension and judgment "Why do we have houses?" (Terman, 1960); Comprehends given information and is able to provide solution "What do you need to put two pieces of wood together?"	Balance scale with objects to sort	
	Sort objects by one attribute; has difficulty reclassifying group of objects; Compares parts of an object; Begins to match objects in one set to objects in another set by sensory perception; Establishes one-to-one correspondence;	Balance scale with objects to sort Montessori number sorter	Sort food Sorting buttons

Cognitive: Classification

Age in months	Stage	Appropriate Equipment	Alternative
48 (cont'd.)	Comprehends and responds to questions by giving information "How many legs does a dog have?" (Wechsler, 1967).		
58-72	Arbitrary classification--not sharply defined; no overall play. Classifies one attribute.		
60-84	Multiple classification--2 or 3 properties at the same time in looking for object to complete a set.	Attribute blocks	
72	Sorts by texture, function, material, weight. He can use simple negation. Responds to anologies by relating concepts which are presented visually "If this goes with this, what goes with this?" (McCarthy, 196); Looks at several pictures and responds to "Tell me all about these pictures" (Terman, 1960).	Sorting various fabric textures.	
84	Perceives absurdities in picture "What's funny about this picture?" (Terman, 1960).		
96	Remembers and asks questions about stories (Terman, 1960); Responds to verbal absurdities (Terman, 1960); Comprehends & responds to questions involving problem solving "What should you do if you found a 3-year-old baby that was lost		

Cognitive: Classification

Age in months	Stage	Appropriate Equipment	Alternative
96 (cont'd.)	from his parents?" (Terman, 1960);		
	Makes hierarchial classifications based on inclusion; Responds to alternate-problem situations "A man and lady are at the restaurant. The man looks embarrassed when the waiter brings the check. Why?" (Terman, 1960); Notes detailed changes in shape from different perspectives; Conceptualizes the singular class the sun, the moon; Considers several attributes simultaneously when classifying objects (classification)--shape, color, size, thickness.	Multi-sensory concept center Attribute blocks	Cooking activity
108	Uses words, "all" and "some", correctly for classification; Performs double classification.		

OPERATIONALIZING THE CURRICULUM

There are many facets to implementing a total curriculum. The first step is creating the physical environment to meet the developmental needs of two through five year old children, which was previously described. Next is the coordination of the four major variables in setting conditions for learning that we previously mentioned in the discussion of the rationale for the curriculum model. In review, the learning facilitator is continually going through the following sequence:

1. Administer appropriate instrument to assess entering level of the child.
2. Write developmental learner outcomes.
3. Evaluate learner characteristics of the child.
4. Evaluate situational variables.
5. Select appropriate strategy/strategies.
6. Determine content for the strategy.
7. Organize the learning environment.
8. Implement the designed conditions.
9. Continually assess where the child is in relation to identified developmental outcome.

A total curriculum for young children must include a program for the child's parents. The Child Development Center has a problem that was developed by Dr. Richard Abidin that is briefly described as well as a more traditional teacher-parent conference structure.

The following is a summary of one child's cards from September to March throughout the school year. This is followed by a developmental summary based upon the data collected from daily cards.

The data compiled here comes from all recorded interactions and observations. On the dates where no assigned task is mentioned, it can be implied that the child was actually engaged in activities of his/her choice throughout the session and was therefore not interrupted. This portion of recording system is adapted from the Early Learning Center in Stanford Connecticut.

Daily Record Keeping. Teachers and student teachers working in the Child Development Center keep daily anecdotal records on each child. These records enable the Head Teacher to determine the developmental levels of each child as well as providing accurate feedback for the parents.

Teachers wear bib aprons with 2 large front pockets. The 3"x5" note cards used for recording keeping fit neatly into the pockets and are all dated daily. Every 2 weeks each child's cards are typed and then reviewed by the Head Teacher. At the end of each session the teachers meet to give input from the cards in order to plan for the following day. From the records taken the teachers are able to determine what activities a child chooses, equipment he masters, his social development, as well as his motor, cognitive, and language development. From the above, one task is selected for each child to do the following day and posted on the Focus Sheet. An example of the focus sheet follows. The task is always implemented at a time during the day when the child is not already engaged in an activity of this choice. After the task is completed, usually not lasting longer than 5-10 minutes, a check mark is put beside the child's name.

00339

Morning Focus Sheet

John Doe	Sort red objects in large truck
	Two tasks of his choice through completion
	Use tutorgram to met on alike pictures
	Large buttoning frame
	Metal insets on red paper
	Counting yellow candy
	Montessori counting rods
	Reinforcement for putting toys away
	Large body puzzle
	Classification game
	Box concept center (pretext)
	Two puzzles of his choice through completion

Summary of Daily Cards for Two Year Old Female

Child's Name:_____

9/13/73	Worked horse puzzle quickly Pasted scraps on paper. Played with doll in house 5 min.
9/14/73	Read several stories to her - she wanted to look at pictures. Imitates words well.
9/17/73	Listened to three stories. Worked lil' Bo Peep, kitten, monkey puzzles peg board. Stacking elephants connected legs, said she didn't want to connect trunks. Worked dog puzzle - asked "Here" when couldn't fit a piece could fit all but 3 pieces. String beads 5 min.
9/19/73	Looked at book she brought. Labeled pictures - laughed at pictures and at me. Dog Puzzle - by herself. Bo Peep - with help, said "I did it!" Assigned task: Language experience circles did not know colors, except green; seemed to see the shape relationships. Rather than the color relationships. Did only the "easy" side; did not want to do it again. Pasted 10 min.
9/20/73	Did houses, hens, apples templates. Assigned task: String beads - did not want to string beads. Matched green papers and named the color, did not respond to other colors. Put all chairs under table for snack.

00200

	Colored 2 pictures Worked with colored blocks, but did not know colors, stacked the blocks.
9/24/73	Wanted to watch filmstrip, but when she put on earphones, she began to cry and did not want to continue. White shape puzzle by herself. A.T. Red concept center - used the clay and looked at doll.
9/25/73	Pasted, colored, Put beads on string. Named green and orange. Worked Lil' Bo Peep by herself, shaped and laughed. Worked it twice. Tea party, alone. (Red concept center - worked red apple puzzle. A.T.)
9/26/73	Duck and Bo Peep puzzles; pegs and colors; plastic balls and blocks. parquetry blocks (trouble with colored design, but fast with simple shaped panels); tea party with me. (Tea party with another child - wanted to have the party with me. A.T.)
9/27/73	String beads and named green and orange. Played alone with shape puzzle and circles and squares.
9/28/73	Shape correctly; talked about a little dog in pictures. Used snap shapes with Tracey briefly. Chicken puzzle with some help. Monkey puzzle alone. Geometric shape puzzle. Tea part. Pasted picture. Water table - played there without any intervention 10 min. A.T.
10/1/73	Asked to help put things away. Water table with Tracey 10 min. - poured from cups.
10/2/73	Water table. Squirrel puzzle with help then by herself. Dog puzzle with help Playdough. Tea party, read 14 Bears, she counted to 7.
10/3/73	Number sorter (didn't finish), stacking elephants. Used scissors to cut - holds them correctly by herself but can't cut more than once without starting over.
10/4/73	Reading story to herself; listened to story. Arranged red beads in box, played with playdough. (Assigned task - cutting; cut 3 straight lines with my help).

00201

10/8/73	Used playdough 1/2 hour. Large button frame wanted to try all buttons - needed help unbuttoning.
10/10/73	Painted; playdough; playing with beads. Pegs in peg board.
10/11/73	I was sitting at table, she brought over cups and plates, "I made cookies." Tim was writing T on chalkboard. Elizabeth came over and wanted to write. Wanted to write E after I wrote one on board. Drew circles. and a house. Changed from hand to hand, but used right most of time. Large button frame - wanted to unbutton alone. She did 2 then wanted me to do 2, button all back.
10/15/73	Came out in hall where I had finished tracing Susie. Eliz. said "That's Susie! Draw me!" She colored part of her pants when the drawing was finished. Put all but hexagon in Shapo without help.
10/16/73	Yellow concept center - did not remember color yellow. Pasted with yellow scraps. Outside, counted to 5 correctly and then said "Go" and ran. Did this over and over. Repeats everything said to her now. Will repeat colors as Nathan says them of her.
10/17/73	Knows color orange; took stacking hexagons apart and put back together. Continued taking apart, testing and putting together.
10/18/73	Put all of the different sized cups inside of one another correctly. Yellow concept center - did not remember yellow.
10/24/73	Had "Mis Moppet" read to her and talked a little about pictures; went thru green book and didn't know all of the shapes but repeated them. Quickly did Montessori cylinders.
11/11/73	Cut and paste picture, doesn't use just one finger. Didn't want to take off coat. Paired with Chris rolling ball back & forth. Pasting with one finger.
11/12/73	Worked on macaroni picture about 10 min.; worked "boy sprinkling" puzzle with Carl, did not want to share pieces; on second puzzle with Carl, "boy with raincoat"

00202

	shared more and had more trouble with pieces; tried "bird" puzzle but couldn't do it; watched Carl and David building tower and retrieved some blocks for them. Gluing with one finger tried to remember. Wanted me to get the glue off her finger.
11/14/73	Wocked duck puzzle alone; glued alone; color inch cubes alone naming purple & orange correctly. (BEH. LAB.) Rocked in rocker. Started playing as if she were in swimming pool, copying what Tracey did and said.
11/15/73	Parallel play with Susie, rolling colored plastic balls back and forth on floor. Lines and circles at blackboard. Tea party with Susie. Glued. Horse puzzle. Pair with another child.
11/19/73	Started working on stacking barrels when saw M&M's on them, put a few together with little trouble, could give them to me in proper graduated sizes. Spong painting - knows purple, orange. Hair dryer, powder, hair lotion with Carl.
11/20/73	Glued macaroni. Said "Could you write my name?" Worked on Elaine's hair at beauty parlor area with Susie. Said she wanted to paint in hall tomorrow.
11/21/73	Started serving coffee to Elaine and couple children. Painting in the hall - painted 5 min.
11/26/73	Built a little with legos; pasted some scrap on paper. Drew some vertical linear marks at board. "Washed dishes".
11/28/73	Painted (stayed at bottom of page); built with legos, showing Chris how to use them. Started playing tea party. Could zip and unzip but couldn't put two parts together. Wrote a little on board. Zipper frame.
11/29/73	Listened to Three Bears twice. Painting, pasted beans and drew. Painted. Glued, cut paper. Zipper frame - still can't start zipper alone. Watched Jimmy at tutorgram and knew lamb. Could identify dog and horse. Could not easily put pointer in hole initially but after about 5 tries could do it without difficulty. Could not discriminate between

00203

	lion, leopard, and tiger. Red and green peg board. Knows blue, orange. Monkey puzzle; put together twice without help.
12/3/73	Glued cotton balls on Christmas trees. Colored, cut. (Tutorgram matching alike pictures. Did 5 cards as I helped her hold pointer. Squeeled when buzzer went on. A.T.)
12/4/73	Worked elephant puzzle quickly, then helped Susie with duck puzzle; had a solitary tea party, then started serving Nathan when he silently sat down & joined her. Art table. Tiles with Tracey.
12/5/73	Played in housekeeping with Tracey. Elaborate tea party at end with Tracey including 4 others. Used many materials as food, told everyone what to do.
12/10/73	Water table; doll house. Magnets; doll house. Needed help with sailboat puzzle. Experimented some with magnets.
12/11/73	Mushroom nob puzzle - needed help with top. (Buckling frame - helped me do it; did one buckle alone. A.T.)
12/12/73	Glued; painted. Numbered dominos. Art table. (Buckling frame - did 2 buckles alone then wanted to stop. A.T.)
12/13/73	Cutting (held scissors upside, thumb at bottom); easily did snowman and kit nob puzzles.
12/14/73	Painted, cut cards for picture. Painted; wanted to hear a story. Helped cook pretzels.
1/13/74	Legos. Number dominos with help.
1/16/74	Puts 100 pegs in holes - 15 min. Wore dress up clothes.
1/17/74	Puzzles 1/2 hour. Leggos, water table, art table - 10 min.
1/18/74	Painted, filling whole pegboard; dressed up. Drew with magic markers (fought with Susie over them).
1/22/74	Some attention to cutting and pasting; worked several puzzles (duck easily; circus with help from El.). Puzzles (4) alone; painted. (Leggos - naming colors

00204

	red and blue. Stacked all red Leggos. A.T.)
1/23/74	Fingerpainted (didn't want to get fingers in paint). Drew picture of "water" and kitchen - asked me to draw boy, telling how many feet and arms to put on. Flower puzzle alone.
1/24/74	Played 3 games of concentration with Susie. Remembered where 3 pairs were. Worked 5 puzzles.
1/28/74	"Cat" and "3 Pigs" puzzle with some help, train puzzle. Helped Nathan do puzzle. Painted picture using bottom of page only. Puzzle alone with knob. (Concentration with a friend - wanted to choose pictures to use. Found 3 pairs - played 10 min. A.T.)
1/30/74	Squealed when she climbed loft for first time. Worked several puzzles. Started building house from blocks - lost interest. Listened to "The 3 Bears". Glued materials, scraps of paper.
1/31/74	Gingerbread puzzle with help on only first couple of pieces. Unifex cubes, building columns. Glued picture - mostly glued with beans and spaghetti.
2/1/74	Worked several fairly difficulty play play school puzzles fairly quickly, while also helping Liz see where some pieces of her puzzle belonged. Then worked free standing pig, bear, and cow puzzle. (A.T. - Color diminoes with a friend - could match all colors but could not name them. Wanted to play twice.)
2/4/74	Painted on easel. Made 2 collages of material. (A.T. - sound boxes; some trouble with matching puzzle with help.)
2/5/74	Thrilled at working several puzzles successfully. Worked rod puzzle with shapes and on it - when putting shapes back on rod grouped them according to shape & color (considered 2 attributes). Two puzzles. Painted. Strung beads. (A.T. - Color dominoes - asked to play, Susie and Lee played too. Remembered how to play - named red, blue, and orange correctly.)
2/6/74	Worked several puzzles very quickly.

00205

	Doll house. Painted.
2/7/74	A.T. - Help Lee do puzzle. Did that & then did one herself with help from L.F. Worked a little putting Leggos together. Spiral with shape pieces - put back on spiral by color and shape. Worked very difficult robin puzzle with only a little help. Elephant puzzle very quickly.
2/10/74	Pasted and cut some. Named a couple of magnetic letters. Wanted to know what 6 letters said. Found E for Elizabeth. Dog puzzle alone. Cut and pasted. Played with doll.
2/12/74	Five puzzles alone. Worked for 7 min. with pink tower. Asked for help with proper placement of blocks.
2/13/74	Played with playdough for 10 min. & made hot dogs, pie, etc. at my direction. Read stories with Elaine. (A.T. - Pink tower - tried 3 times - got all but one piece on last try).
2/18/74	Played with the playdough. Did 2 small knob puzzles. Played house with Susie. Played with Montessori cylinders and replaced them in about 5 min. Used playdough. Clay printing.
2/19/74	Said she felt happy today. Used playdough. Played with playdough making designs. Did 2 puzzles. Played color dominoes for a few minutes but left to hear story on loft. Modeled after Liz and Tracey and made birthday cake from small number peg board, took it to blow out candles and eat. Cut paper in small pieces with Wes (parallel play). (A.T. - 2 Montessori cylinders with pieces mixed up. Said "Look, I did it!" Worked for 5 min.)
2/20/74	Asked to hear story - listened and answered questions. Rolling with playdough made cookies, putting them under table to cook. (A.T. - 3 Montessori cylinders with pieces mixed up - asked for help. Worked 10 min. until completed correctly.)
2/25/74	Painted. Used playdough. New puzzle alone, Leggos.
2/26/74	Painted. Puzzle. Helped Carl do Hansel

00206

	and Gretel puzzle. Finger paint pictures. Drew with magic markers.
2/27/74	Made three collage. Played at abacus pushing beads back and forth then watched Chris doing it. Worked Snow White simplex puzzle, then helped Liz do one suggesting where pieces belonged.
2/28/74	Had story read to her. Climbed well on loft. (A.T. - Pair with Chrissy at abacus helping Chrissy. Say the word bead and name colors. Helped Chrissy push beads then left.)
2/29/74	Helped cook bana bread. Played with playdough. Pretended under the table was the oven to cook playdough.
3/1/74	Worked with playdough, smashing and cutting. Painted. Only on small part of paper.
3/2/74	Pasted. Pasted again with Susie. Watched movie. Did buttoning frame with help. Could not work zipper frame except with much help.
3/3/74	Listened to story. Drilled one hole and hammered one nail with help. Listened to sound filmstrip. Listened to story at sound center using film-o-sound machine. Listened to story by Dr. Seuss on loft. Made art table construction. Played at concept center table.
3/4/74	Had a tea party with Susie and Wes. Explored at concept table. Listened to story about Cindrella. Worked a small knob puzzle easily. (A.T. - Drilling or hammering - didn't want to hammer; drilled 2 holes while I held top of drill.)
3/5/74	Sound filmstrip. Helped make fudge (A.T.). Cutting & stirring. Wrote on chalkboard.
3/10/74	Playdough. Clay painting. Went to bathroom alone.
3/11/74	Playdough (made pancakes); kite puzzle; stocking rings. Drew at chalkboard 5 min. "Spikders," "arrow".
3/12/74	Blot and sprinkle paint 6 times. Worked on puzzle with Elaine. I read Elizabeth "3 Bears" story for about 10 min. and

00207

she listened to "Cat in the Hat" for about 10 min. A.T. - 4 Montessori cylinders with Susie mixing up pieces - worked together 10 min. Then did 2 puzzles together.

Twice a year developmental summaries are compiled on each child relating growth to each of the developmental outcomes of this curriculum. These summaries assist the teacher in setting new goals as well as reporting the child's growth to the parents. The information for these developmental summaries is taken from the daily anecodotal records.

Language Development

Auditory Perception	
Auditory Acuity	Within the normal range of development -- is able to receive any form of auditory communication & sounds.
Focus of Sound	Within the normal range of development -- is able to determine where the sound was and the level to attend to sound.
Figure Ground Discrimination	Within the normal range of development -- can reproduce significant stimulus when paired with irrelevant stimulus.
Auditory Discrimination	Within the normal range of development -- can distinguish gross sounds.
Phonology	
Class of Sounds	Advanced in this area of development -- 75% of sounds are produced correctly, speech is understood by those outside the family, can repeat sentence of 6 syllables.
Intonation of Sounds	Displays expression in speech, shows contrast in pitch making her voice pleasing.
Sequencing, Sequential Retention, & Synthesizing of Sound	Above the developmental norm (30-46 mos.) -- can repeat sentences of 4 words.
Auditory Mrmory	Within the normal range of development -- can respond immediately to speaker's utterance.
Classification, Integration and Monitory of Sound	Within the normal range of development -- can distinguish and identify common sounds in the environment, associates spoken words with meanings, can obtain meaning from sentence structure, follows simple directions, is learning to look and listen for examples.
Semantics	Above the developmental norm -- combines words and actions for own pleasure can name 3 colors, can count 3 objects correctly, uses words to designate per-

00208

Language Development (cont.)

	cepts, concepts, ideas & relationships.
Syntax	Above the developmental norm -- uses general transformations (ex. Could you write my name?) and auxiliary verbs.
Grammar	Within the normal range of development.
Fluency	Above the development norm -- responds freely and spontaneously.
Reading Readiness	Within the normal range of development -- frequently displays a desire for books, attends when read to and labels pictures in books while following simple stories.

Social Development

Self Help	Within normal range of development-- feeds self properly, unbuttons accessible buttons, goes to bathroom alone & recognizes need for washing.
Individuation	Exhibits ability to express own preferences, accept minor failures and is becoming more independent of adult attention. M. is able to have positive peer interactions and shows interest in the welfare of others.
Behaviorial Adjustment to Society	Maintains appropriate reality and fantasy proportions, is spontaneous, beginning to use appropriate control for handling of drives; expresses affection; shares toys and materials in play activities.

Perceptual Motor Development

Perceptual Abilities:	
Visual Acuity	Within the normal range of development -- can see and identify objects.
Visual Attending	Within the normal range of development -- can direct and sustain attention to visual stimuli.
Visual Memory	Within the normal range of development -- can remember one or more pictures after being shown a picture and then asked to find it among several other pictures.
Perceptual Discrimination	Within the normal range of development -- can identify alike pictures.
Perceptual Constancy	Within the normal range of development -- beginning to estimate distance of objects; can reproduce 3 piece block design.
Figure Ground Discrimination	Within the normal range of development

00209

	can identify parts of body on a doll or puzzle
Depth Perception	Within the normal range of development
Movement Perception	Within the normal range of development
Laterality	Within the normal range of development -- manipulates with both hands but predominate use of right hand.
Verticality	Within the normal range of development -- developing good posture and is able to sit, squat, run and stand with heels together.
Directionality	Within the normal range of development -- can identify "up" and "down" in relation to her position in space.
Body Awareness	Within the normal range of development -- can verbally label body parts or point to them; can locate objects in reference to front, back, side, head, and feet.
Physical Abilities:	
Strength	Within the normal range of development -- muscular strength is continuing to develop; can rise to feet without hands.
Flexibility	Within the normal range of development
Balance	Within the normal range of development -- walks 3/4 of way on walking board, squats to play without hand support, can walk upstairs using rail.
Agility	Within the normal range of development -- runs well with no falling (can stop and start easily).
Endurance	Within the normal range of development
Perceptual Motor Abilities:	
Fine Motor Development-Finger Dexterity	Above the developmental norm -- manipulates tiny objects with ease.
Manual Dexterity	Above the developmental norm -- makes appropriate arm and hand movements.
Eye-hand Coordination	Above the developmental norm -- uses scissors to cut correctly, works 12 piece puzzles, can complete Montessori solid cylinders, can string 4 or more beads in 2 minutes.
Eye-hand Movements	Above the developmental norm -- can put 100 pegs in pegboard; can imitate vertical or horizontal lines.
Steadiness	Above the developmental norm -- builds with small cubes.
Locomotor Skills	Within the normal range of development -- is able to walk, run and jump, and walk up and down steps.

Cognitive Development

Classification	Above the developmental norm-- has begun to classify by sorting shape and color, responds to pictures.
Seriation	Within the normal range of development -- can make gross discrimination between big and little.
Spatial Relations	Within the normal range of development -- has acquired horizontal orientations and confines painting to own paper.
Temporal Relations	Within the normal range of development -- aware of immediate temporal understandings (ex. What happens next?)
Cognitive Processes	Within the normal range of development -- imitates movements of others.

Standardized Assessment. Standardized instruments are typically used to assess entry level on an ontogeny or to further investigate a suspected developmental delay. Many times only appropriate subtests are used rather than whole instruments. Suggested instruments are given for each area of development. In several cases there are no existing developmental measures. The instruments are listed here. A more complete description of each measure is found in the module covering each area of development.

Measuring Language Development

Meaning Auditory Perception. In fact several tests have been developed and distributed to educators to measure synthesis abilities in an effort to improve the task analysis of language deficits. Probably the best known is the Sound Blending sub-test of the ITPA designed by Kirk, McCarthy and Kirk (1969). Others include the Roswell-Chall auditory Blending Test, The Auditory Test 2 from the Marion Monroe Reading Aptitude Test, The Body Parts Test of Phonemic Synthesis (Goldman and Dixon, 1971,). Only one test of auditory analysis was found in the literature, which was the AAT (Rosner and Simona, 1971). Upon examination the AAT was found to be similar to the Auditory Closure sub-test of the ITPA, rather than a test of auditory analysis. The child is asked to omit certain sounds from a word given by the examiner rather than break a word into its component parts.

One would have to conclude that the research on auditory vocal analysis and synthesis skills of children is meager.

Phonology. These tests are used to determine if child is producing sounds incorrectly or which sounds are misarticulated in a child's speech. Measures for assessing phonetic development include: No-Howe Speech Test for English, Consonant Sounds, Smith, 1957. Goldman-Fristoe Test of Articulation - This test assesses articulation of consonant sounds. Although it's not designed to specifically study vowel and diphthong production, all vowels and all except one diphthong are measured so deviations can be noted. Appropriate for children between 4 and 8 years of age. Developmental Articulation Test - Henja, 1955 - Consonant articulation in single words, blends excluded, is measured by this test. Poole Consonant Test - This is a test that can be constructed by classroom teachers. It tests consonant sounds - the beginning, middle, and end positions. The teacher can make picture cards for the nouns used

00211

and administer the test herself. Poole (1934).

Semantics. Children's semantic abilities, hence concepts may be assessed in three ways. To begin with the learning facilitator must discover what concepts the child has and what are their content and qualities. By being cognizant of the semantic knowledge of those concepts children should know by approximately age seven the learning facilitator can begin to study the evidence of conceptual development by observing the child's physical and verbal behaviors. A longitudinal checklist should be kept for each child to note the emergence of new concepts, attainment of concepts and higher hierarchial conceptual understanding.

To assess the effectiveness of multi-sensory learning systems to teach specific concepts a basic concept attainment instrument can be used. Concept measurement involves making a common response to a class of stimuli. A concept is understood when the learner can identify any member of the class as belonging to the class. Classification is not complete without the generalization that all members of this set meet the test of specific criterion. Woodruff (1967) suggested once an individual understands a concrete concept he starts to associate and combine them and mold them into different kinds of abstractions, generalizations and principles.

The public test of the formation of a concept is the ability to respond correctly and reliably to new positive and negative instances of it; it is not implied however, that a concept has not been learned because it cannot be verbalized (Carroll, 1964).

Bruner (1965) distinguishes the difference between concept formation and concept attainment. In the formation stage the child has the ability to interact with categories but can't define their characteristics. He can discriminate, but can't tell you why, while concept attainment involves verbal specification of characteristics of a category. The child can communicate and define attributes that distinguish exemplars from nonexemplars.

David Elkind (1968), in a discussion of Piaget, established that every concept has two different kinds of content:

1. There is the realm of objects that the concept points to or denotes, which constitutes its extensive content. This is the kind of content with which the discriminitive response version of a concept is concerned. The content of a concept includes all the exemplars of the concept (tree) that the individual can correctly classify. Traditionally, we tend to sample the extensive content by presenting the child with exemplars that vary rather widely among themselves, for example by presenting him with a palm tree or evergreen.
2. The other kind of concept content corresponds to the common feature of features connotated by all the exemplars and constitutes the concepts intensive content.

This is the kind of content assessed by verbal definition procedures. The intensive content of a subject's concept is arrived at when the child asked to tell what "vesper" means or the way in which an "apple and a pear are alike or the same." By comparing the child's answers with those given by a representative normative group one can tell the extent the subject has acquired the commonly accepted intension of the concept.

There is little coordination between the extensive content of a concept as revealed by discriminative responses and the intensive content of the same concept as revealed by verbal definition.

Following are some examples of measures for multi-sensory learning

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systems.

Once the child seems to have mastered basic understanding of the concept the learning facilitator should continue to assess the further development of that concept.

Completeness of the conceptual knowledge can be assessed. This is done by use of the following categories:

1. Consistency - does the child maintain the same response as stimulus is varied?
2. Accuracy - does the child give partial responses?
3. Clarity - does the child give clear and acceptable examples?
4. Fullness - does the child give several aspects or details? Can he see opposites?
5. Extensiveness - does the child give many different kinds of illustrations?
6. Applications - does the child use the semantic concept correctly when speaking?

The measurement of concepts cannot be confined to simple overall measure or scores such as those from intelligence and achievement tests, because concepts are not considered to be functions of ability. "It cannot be assumed that if the child lacks the concept, it is because he is unable to learn it or that his failure to learn after he has been 'taught' is purely a matter of ability." Johnny does not do well in arithmetic not because he does not work enough, but because he has not built the previous intellectual structures required to master that particular arithmetic concept. Therefore, measure needs to be designed in reference to the individual child's understanding of the subject matter.

Another way of children's concept can be measured as an estimate of the maturity of thought is looking at the manner in which children define words. Younger children usually think in terms of function and description, illustration and demonstration; whereas older children more often use synonyms and explanation types of responses. Children seem to shift gradually from the use of concrete ideas and emphasis on isolated aspects to an emphasis upon class features.

Measuring conceptual attainment in terms of maturity of intellectual thinking enables the learning facilitator to add scope and sequence to the multi-sensory learning systems. "Instruction that enables children to think about such materials at higher stages requires that the teacher listen closely to the child and begin at the level that matches the child's already developed structure. It requires that movement be sequential, not haphazard, and that demonstration, discussion, and group interaction be the meaningful activities for children. When the teacher has some understanding of the child's level of functioning, materials can be organized at that level and developed to move toward the next stage." (Gordan, 1966).

Perhaps the best standardized test of vocabulary is the Stanford Binet. For developmental assessment the following sequence is suggested:

Cattell Infant Intelligence Scale
Stanford Binet Picture Vocabulary Subtest
Stanford Binet Definitions Subtest

Syntax. The two-year-old child is recalcitrant, and one cannot expect to obtain from him syntactical structures that were used in a measure with four and five year old children by Brown and Bellugi (1964). Therefore, to assess the syntax structures of the very young child, one must write grammars on the child's observed speech.

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Although a description of the syntactic structures in a child's language does not give a total account of this language development, it can go beyond the quantitative measure of percentages and proportion of adult usage provided in previous studies in children's grammar. It can encompass the interrelationships of various measures of language development and describe their inter-dependencies (Menyuk, 1961).

Lee's Developmental Sentence Types. Lee (1966) proposed a method of analyzing language samples that was based upon the work of Braine (1963) Brown and Bellugi (1964), McNeill (1955), and Chomsky, (1957). The Developmental Sentence Types model was an attempt to illustrate the progression that the child might go through from his early two word combinations to the use of the non phrase, verb phrase, and other grammatical forms as independent elements or kernel sentences from which transformations will be derived.

Lee's explanatory model of grammar is analogous to a cetegorization theory of learning. It is hypothesized by linguists that the attributes of a given category are memorized and the child can then produce new instances of the category.are=

By using this instrument one can obtain the following information:

a. Identify the grammatical categories of the population's language.
b. Determine which categories are used more consistently than others.
c. Which categories are acquired at an earlier or later age.

A Descriptive Study of the Syntactic Structures in the Language of Children: Nursery School and First Grade, Menyuk, (1964). The Chomsky model considers the grammar as having a tripartite structure; namely a phrase structure level, atransformation level and a morphology level. Each of the tree levels of the grammar has a sequence of rules which generate the sentences within the level. Initially, simple-active-declarative sentences are derived at the level of phrase structure. Chomsky calls these sentences terminal strings and they form the basis for all other sentences. The more complex sentences are formulated by the sequence of rules at the second level of the grammar, which Chomsky has termed transformational rules. The transformational rules are of two kinds: optional and obligatory. The optional rules are of two kinds; they are chosen by the speaker--he can choose to formulate a positive sentence, a negative sentence, an imperative sentence, etc. Once having chosen a form, there is a set of obligatory rules which must be followed to produce sentences which will be accepted by the listener as grammatical. The transformational rules carry strings with phrase structure into new strings to which the rules at the third level can apply. At the third level of the grammar there is a sequence of morphophonemic or inflectional rules from which the actual sounds of speech are derived. Chomsky's model describes these rules at each level, and tries to explain how a grammar is produced on the basis of these rules.

In the above study the basic structures which generated all the sentences in the total language sample could be described with the framework of the Chomsky model. A child's grammar was written which includes those structures found in both children's and adults grammar and those structures which are peculiar to the children's grammar. Thus, it is a self-contained system describing a stage of development

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of children's grammar.

A transformational model of syntactic structures can be used to describe children's grammar from under 3 years of age to over 7 years as a self-contained system and to indicate developmental trends.

Northwestern Screening Test (Lee, 1971). The NSST is a quick screening device to make an estimate of syntactic development. It can isolate those children between 3 and 8 years of age who are sufficiently deviant in syntactic development to warrant further analysis. The NSST measures both receptive and expressive use of syntactic forms, using identical linguistic structures in both parts of the test.

Reading readiness: language experience stories.

Informal Language Inventory (Stauffer (1969).
Tell child - "Here is a picture. Tell me the story you see in the picture" or "Tell me what you see in the picture" (If the child does not respond). This change of instructions are important. The first question is a request for picture analysis and the projection of story plot. The second asks for simple labeling or naming objects or events.

LEVEL I
Tell me what you see or what is this. Child does not respond unless encouraged - lacks security and confidence - simply names or labels objects in the picture.

LEVEL II
Tell me what you see. Child uses simple sentences - "I see a cat".

LEVEL III
Tell me a story. Child responds to the main action depicted - uses words that describes - does not tie all elements into the main action - "I see a boy. He is bouncing a ball. I see a cat sleeping."

LEVEL IV
Tell me a story. Actually tells a story-relates the elements in the picture and sees beyond. He makes plots - projects into the future and also looks into the past. Children on this level may be able to read. "A boy is bouncing a ball. I think he will loose the ball and the dog will chase it."

NUMBER OF STUDENTS

level 4_____	_____
level 3_____	_____
level 2_____	_____
level 1_____	_____
Date _____	Date _____

INDIVIDUAL EVALUATION
Number of words in first story_____
Number of words in final story_____
Number of sentences in first story_____
Number of sentences in final story_____
Number of words in longest sentence in first story_____
Number of words in longest sentence in final story_____

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SEQUENCING

I. Ability to relate events in a naturally ocurring order pictorally.
II. Ability to relate events in a naturally ocurring order verbally.
III. Ability to visually and verbally relate time sequences through ordering.

WORD TOTALS

I. Number of vocabulary words.
II. Number of nouns.
III. Number of verbs.
IV. Number of adjectives.
V. Number of adverbs.

Measuring Social Development

Measurement of Body Image. Researchers have used many methods to measure body image. Two popular means of assessment are psychiatrist's projective tools such as the Rorshach Ink Blot Test, and the child's ability to verbally identify various body parts. Others have measured it by having the child draw the human figure. It is assumed that distortion of details, omission of parts, variations in size, difference in emphasis, etc., reflect a state of confusion in the body image of the drawer. This method has been critized for being too subjective. Kephart suggests behavioral criteria by which a child with body image problems can be detected:

1. The child selecting a space on the floor that's too small for task defined - or vice versa - indicates an imperfect awareness of the space occupied by his body in various positions.
2. In activities which require them to move various parts of the body upon command, the child may not be able to move one arm without the other arm.
3. Long hesitation before child can move a designated body part.

One problem in the area of body image assessment has been that the major efforts in the area have centered on the manner in which body image scores of several kinds reflect various personality disorders, rather than on how a psychologically sound child perceives his body and its movement. This should be taken into consideration when choosing an assessment tool. The following is a list of some of the body image measurements used with young children:

Factual-Localization Test - This is an adaptation of Bender's Face-Hand Test (1953). In this test, a part or two parts of the child's body are touched and the child is asked to identify the object or body part which has been touched. It detects body image difficulties.

Draw-a-Person Test - by Mackover (1949) is a clinical tool requiring the child or adult to draw a picture of a person. This technique has been used to evaluate personality, assess the presence of neurotic and?orpsychotic symptoms, measure intelligence, and body image. The validity of the test has frequently been questioned. It is of limited value as a means of assessing body image. Most clinicians use this test within a battery of projective tests to gain a more global picture of the person.

Imcompleted Man Test - by Ilg and Ames (1966). This ia a modification of the draw-a-person test in which children are asked to add missing body parts to half a man. Evolution of body image is reflected in test performance.

Imitation of Gestures - by Berges and Lezine (1965). The exper-

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imenter, facing the child, scores the accuracy with which he can reproduce both simple and complicated limb and hand gestures.

Perception of Body Conformations - by Adams (1963). This test employs a mannikin and/or outlines of bodies with various conformations. As the individual constructs a mannikin or selects the outline he perceives the most closely conforming to his own or to some ideal body image, various measures may be collected.

Verbal Identification of Body Parts - Benton and others have constructed a test of the accuracy and the speed with which a child can touch or move his various body parts when asked to do so. At one point, the Benton test evaluates body image by the accuracy with which the child can touch or move his various body parts when asked to do so. At one point, the Benton test evaluates body image by the accuracy with which the child can point to the body parts of a picture. The primary criticism against such verbal tests is whether they are testing a basic precept, or merely are a reflection of the quality of a child's vocabulary.

Measurement of Self Image. There are very few measurement instruments for self image as such. Most self concept tests can be modified to give measures of both self image and mirror image. This can be done by changing the wording of the items from "I am most like..." to "My teachers think I am most like...". The following are examples of tests which may be used to measure self image and mirror image.

Perception Score Sheet by Combs and Soper (1963) - This score sheet measures self generally, self as instrument, self with peers, self with adults, self with teacher, self and school, perceptions of adults, perceptions of teachers, etc.

Brown ID's Self Concept References Test by Brown (1966) - The original version gives children's perceptions of how their mothers, teachers, and peers view them. While looking at a picture of himself, the child is asked 14 to 21 bipolar questions in an either-or format.

Measurement of Self Concept. The problem of measurement of self concept has arisen due to the difficulty in defining self concept. Most of the current techniques for measuring self involve self-ratings or self-descriptions. Occasionally ratings of an individual by other people such as teachers or peers are used. One problem of measurement occurs because many investigators devise their own measure of the self, since they have their own definitions for it. As a result, such of the measurement research is not comparable. Another problem is that many of the measures are filled with value assessments so that the child feels compelled to answer in a socially desirable way. These problems should be kept in mind when reviewing the self concept literature.

Specific Self Concepts Measurements

The Self-Concept Inventory was developed by Sears (1963) for use with 5th and 6th grade children. It is composed of categories in which children spontaneously have feelings and make judgments about their own effectiveness and competence. Self rating responses provide two scores that are relevant to the self-esteem dimension. They are SCI: self-satisfaction, and SCI: comparative rating. Uncorrected split-half reliabilities for the two scores are .94 and

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.95.
The Self-Criticism and Ideas of References scales were originally designed for college men (Sears, 1937). These are both self rating scales. The S-C questions involve satisfaction with the self's physical abilities or achievement in school or social relations, and those which express guilt about certain adequacies. The I-R questions are oriented toward hypersensitivity to other people's actions or feelings toward the self. The corrected odd-even reliability coefficients are .81 and .82.
The Feminity Scale was derived by revision of the Fe scale contained in the California Psychological Inventory (Gough, 1957). Hi score indicates high feminity. It is a self-rating scale.
The Self-Aggression Scale (Sears, 1961) contains items expressing hostility toward the self and involves feelings of self-derogation. It is also a self-rating scale.
The Laurelton Self Attitude Scale (Guthrie, et al., 1961).
The Hostility Scale (Culbertson, et al., 1961) consists of 100 items in which the subjects are asked to agree or disagree with a suggested response to an angering situation.
The Social Value-Need Scale (Bolduc, 1960) presents 95 situations in which the subjects are asked to choose between an alternative that reflects social values and one which reflects personal needs.
The Verbal Self-Attitude Scale (Butler, Guthrie, & Gorlow) deals with discrepancies from what is socially desirable.
The Brown IDS Self-Concept Referent Test requires the young child to characterize himself on 14 bipolar dimensions (happy-sad), using for specific referents: a. how he perceives himself; b. how he perceives himself to be viewed by his mother; and c. his teacher; d. other kids.
Self-Concept Measurement of Retardates (Guthrie, Butler, Gorlow, & White, 1964) consists of a series of 50 pairs of colored slides, with the same protagonist throughout (always a woman). The entire series was replicated with a new protagonist and a new cast, but depicting the same need. The subject was asked to choose the slide in which the protagonist was most like herself and to choose the slide in which the protagonist was doing the best thing. This instrument gives two sets of choices for each subject, a reported self and an ideal self.
Lipsitt Self Concept Scale contains a list of 22 traits descriptive adjective phrase, each prefaced by, "I am ..." and followed by a 4 point rating scale from "not at all" to "all the time."
The Learner Self Concept Test is composed of 12 separate items. Subjects are shown drawings representing a particular classroom situation and are asked two questions about them. Responses indicate either positive or negative character identification.
Developmental Profiles - Awareness of self is based on the Human Development Rating Scales. This profile indicates self-awareness of feelings and thoughts.
The California Preschool Social Competency Scale (SPSCS) was designed to measure the adequacy of preschool children's interpersonal behavioral and the degree to which they assume social responsibility and independence. This scale: 1. provides a relative index of the child's social competence, permitting comparisons with children of the same age, sex, and socioeconomic status; 2. permits investigation of the effects of environmental and characterlogical variables on the child's development at differing ages; 3. can be useful in predictive studies of school achievement; 4. can be helpful

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in the evaluation of deviant groups; and 5. can be useful as a criterion measure of the effectiveness of different interventions at the preschool. level. It is designed for use in evaluating the social competence of children aged 2 years and 6 months through 5 years and 6 months. The scale consists of 30 items which are representative samples of the critical behaviors in the preschool child's social functioning.

The Cain-Levine Social Competency Scale was developed to provide a method of measuring the social competence of trainable mentally retarded children. It consists of 44 items divided into 4 subscales: Self-Help, Initiative, Social Skills, and Communication.

The Thomas Self Concept Values Test assesses the personal self-concept value of pre-primary and primary aged children.

Goodenough's Draw-A-Man Test measures self concept and detects maladjustment in kindergarten children.

Preschool Self Concept Picture Test (Woolner, 1966) measures self concept, ideal self concept, and the discrepancy between them. It is non-verbal and contains 4 separate but comparable subsets for Negro and Caucasian boys and girls.

The Self Concept and Motivation Inventory: What Face Would you Wear? (SCAMIN)

Measurement of Self Esteem. The majority of self measures for young children are self report inventories. Self esteem measurements involve the child's evaluation of himself in terms of how well he feels about himself. There are very few self esteem instruments as such. Most researchers use some type of self concept test to measure self esteem. The following is a list of some available instruments most of which have been used with the school aged child.

Children's Self-Social Constructs Test (CSSCT): Preschool Form-Self Esteem Subtest - by B. Long and E. Henderson. This is a self-report nonverbal, since projective techniques. Self esteem is assessed by having the child respond nonverbally by pointing to or pasting a circle representing himself next to other symbols in a picture presented to him.

The Osgood Semantic Differential - this instrument involves responses to a given stimulus through marking twenty-one sets of adjective scales. On each scale, the child makes a check mark to indicate his position between the two objectives. This method is designed to reduce defensive responses ("make myself look good"), and at the same time to avoid the difficulties of scoring found in the projective devices.

The Self-Esteem Inventory by Coopersmith - this contains 58 items, and the child makes a check mark in response to each. For example: "There are lots of things about _____ like me _____ unlike me myself I'd change if I could."

The Q-Sort Technique - This is a method of quantifying the self attitude in which the child is presented with a set of statements printed one to a card. He is required to arrange the statements in a normalized distribution according to a relevant criteria, such as the extent to which the statements describe himself. The method hypothesizes the ability to measure in standardized form the self-image by means of a self-sort and the ideal-image by means of an ideal-sort. The relationship between the two "sorts" yields an index of self esteem based upon the self concept.

Measurement of Ideal Self. Most measurements of ideal self use the same test for self concept except that the person is asked to go through the same items indicating how he would like to be "ideally". For a discrepancy score, the difference is taken between the scores for the perceived self and the ideal self. Following are a few of the measurements which have been used to assess ideal self:

California Test of Personality - Q Sort.

Guthrie, Butler, Gorlwo, and White (1964) devised an ideal self test to be used with retardates. It consists of a series of 50 pairs of colored slides with the same protagonist throughout. The subject is asked to choose the slide in which the protagonist was doing the best thing.

Katy and Zigler (1967) have devised a questionnaire of 20 statements some of which were taken from Coopersmith's (1959) scale of self esteem. Response alternatives were phrased "I would like this to be very true of me". Of course, the child must be able to read in order to take this type of paper and pencil test.

Preschool Self-Concept Picture Test (PSCPT) - (1966-68) by R. Woolner. This test was designed to be used with 4 to 5 year olds. A child is presented ten plates with paired pictures representing characteristics that preschool children recognize, such as clean-dirty. The child picks the person in each plate that he is and the one that he "would like to be".

Measurement of Moral Development. Asessment of moral development has mostly involved observational techniques and subjective reports. In the young child, the level of moral development may be ascertained by application of Kohlberg's stages through introduction of dilemmas (see Kohlberg and Turiel, 1971). Other measures include the following:

California Preschool Social Competence Scale (CPSCS) 1969 - measures children's interpersonal behavior and assumption of social responsibility and covers such things as sharing, helping others, and accepting limits.

Detroit Adjustment Inventory (DAI): Beta Form, 1940-1954 - measures a child's social skill development, emotional adjustment, and ethical adjustment.

Dunnington Sociometric Status Test (1959) assesses a child's sociometric or social acceptance in a group.

Social Behavior Checklist by Ogilvie and Shapiro - assesses social competence in young children.

Social Value Acquisition Battery by Scott (1969) - measures a child's perceptions of cultural value expectations, his conformity with those expectations, and his internalization of three cultural values - self-reliance, cooperation, and compliance.

Socialization Scale by Bommarito - measures social adjustment within the classroom concerning patterns of aggression, social maladjustment, educational maladjustment, and internal unhappiness.

Starkweather Social Conformity Test - a color preference test to measure social conformity.

Stevenson Behavioral Unit Observational Procedure - this observational technique measures social behaviors such as social participation, social control, response to control, initiation of aggression, friendliness, contact with adults, and group situation.

Affective Situations Empathy Test, by Feshback and Feshback - measures empathy expressed by the young child.

Borke Empathy Test - this semiprojective technique measures a child's degree of empathy.

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Generosity Test by Rutherford and Mussen - measures the generosity of a child in a structures setting. Each child is placed in a situation where he can assign candy to his peers or keep it.
Helping-Behavior Observational System, by Clapp - measures helping behavior displayed by a child.
Mischel Technique - measures the child's ability to dealy gratification.
Mummery Scale of Ascendant Behavior - measures socially acceptable and unacceptable ascendant behavior; i.e., behavior by which an individual attempts to acquire or maintain mastery of a social situation.
Picture Story Measure of Kindness Concept by Baldwin and Baldwin - measures a child's judgment of kindness.
Resistance to Temptation Measure by Burton, Allinsmith, and Maccoby.

Measuring Perceptual Motor Development

Bayley Scales of Infant Development, Bayley (1969). The scales (motor scales, mental scales, and behavior record) are designed to provide a tripartite basis for the evaluation of the child's developmental status in the first 2-1/2 years of life. The motor scale is designed to provide a measure of the degree of control of the body, coordination of the large muscles and finer manipulatory skills of the hands and fingers. Results are expressed as a standard score.

Denver Developmental Screening Test, Frankenburg, W. and Dodds, J.B. This test assesses gross motor, fine motor, adaptive language and personal - social development. It's intent is to detect serious developmental delays in young children.

Tactual-Localization Test, adaptation of Bender's Face-Hand Test (Funkand Bender, 1953). In this test objects in the environment, a part or 2 parts of the child's body are touched and the child is asked to identify the object or body part which has been touched. This test detects body image difficulties.

Movement Skills Survey, Orpet, R.E., and Heustis, T.L. This check list was developed to assist classroom teachers, movement education supervisors, school psychologists, and other professional school personnel in evaluating selected aspects of a child's motor development. It is intended for use with Frostig-Maslow MOVE-GROW-LEARN program and with MOVEMENT EDUCATION: Theory and Practice.

Perceptual Abilities

Visual Perceptual Acuity.

National Society for the Prevention of Blindness, Inc., 79 Madison Avenue, New York, New York 10016. (Snellen E. and Letter wall charts; also test kit for Pre-School visual screening).

The Snellen Test for visual screening is the most widely used in school.

*The Snellen Test measures central distance visual acuity only. It does not give any indication of near point vision, peripheral vision, convergence ability, fusion ability, or muscular imbalance. It measures only far point acuity.

American Optical Company, Southbridge, Massachusetts 01550. (Sight Screener).

Bausch and Lomb Optical Company, Rochester, New York, 14602. (School Vision Test).

Freund Brothers, Atlantic City, New Jersey. (Atlantic City Vision Test).

GoodLite Company, Forest Park, Illinois, 60130. (The illuminated chart for use at 20 feet and at 10 feet, plus lenses, and the equipment

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for tests for muscle balance are produced separately).

Keystone View Company. Meadville, Pennsylvania. (New York School Vision Chart).

Titmus Optical Company, Petersburg, Virginia 23804. (School Vision Tester).

Visual Memory.

Colarusso, R.P. and Hammill, D.D. Motor-Free Visual Perception Test (MVPT) Academic Therapy Publications, California; San Rafael, 1972. Child views figure for 5 seconds and is shown a second picture to find it among several other figures.

Graham, F.K. and Kendall, B.S. Memory-for-Designs Test, Revised General Manual. Perceptual and Motor Skills, 11, 147-188. Requires child to reproduce a geometric figure from memory.

Kirk, S.A., McCarthy, J.J., and Kirk, W.D. Illinois Test of Psycholinguistic Ability. Revised edition. Urbana: University of Illinois Press, 1968. Subtest assess visual sequential memory by requiring the child to order a sequence of non-symbolic figures from memory.

Perceptual Constancy.

Frostig, M. Developmental Test of Visual Perception. Consulting Psychologists Press, Palo Alto: California, 1966. This test consists of five subtests with developmental norms from 3 to 9 years of age:

1. Eye motor - detect difficulty in writing.
2. Figure-ground - difficulty in recognizing words.
3. Constancy of shape - difficulty in recognizing letters when in different sizes or colors.
4. Position in space - reversals on rotations.
5. Spatial relationships - interchanging the order of letters.

Perceptual Discrimination.

Elkind, David. Elkind's Ambiguous Pictures. Ages 6-11. Document No. 8154 from ADI Auxiliary Publications Project, Photoduplication Service, Library of Congress, Washington, D.C. 20540. The Ambiguous Pictures Test consists of two sets A and B of seven black and white ambiguous pictures mounted on 8x11-1/2 inch tag board sheets. For one set of pictures shileds are available which when placed over the picture, make the object clearly recognizable. The objects are common ones like cat, tree leaf, face, and so fourth.

Figure-Ground

Cobrinik, L. Hidden Figures Test in the performance of brain-injured children on hidden-figure tests. The American Journal of Psychology, 1959, LXXII, 5660571. Ages 6-11. There are three sets of ten stimulus pictures, plus one or two samples for each set. One set is called picture puzzles and is the usual type of hidden-figure puzzles seen in children's magazines. The second set of ten is the overlapping type of picture in which figures and background share points rather than contours. The type of item, called nonoverlapping, involves sharp contours of figures and background. On the overlapping and nonoverlapping the child is told to find one of four pictured objects within the masked condition. The picture-puzzle takes a while to find the given objects within the picture.

Graham, F.K., and Ernhart, C.B. Perceptual-Motor Battery. Ernhart, C.B., Graham, F.K., Eichman, P.L., Marshall, J.M. and Thurston, B. Brain-injury in the preschool child; some developmental considerations. II

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Comparison of Brain-Injured and Normal Children. Psychological Monographs, 1963, 17-33. Used with preschool children. Was originally designed to use with brain damaged children. Figure-Ground subtest 1. This closely resembles the test developed by Strauss and Lehtinen for use with older brain-injured children. On this scale, the examiner requires the subject to identify thirty five objects from the Binet Picture Vocabulary which are embeded in distracting backgrounds. The stimuli are presented. The Mark-the-Cars subscale is similar to the Figure-Ground subtest in that the subject is to identify ten drawings of cars embedded in distracting background figures.

Laterality.

Benton, A.L. and Cohen, B.D. Right-Left Discrimination and Finger Localization in Normal and Brain-Injured Subjects. Procedures of the Iowa Academy of Science, 1955. This test measures the ability of children and adults to discriminate between right and left. There are two forms of the test: Form A with thirty-two items, requires the subject to execute "localizing movements" on command. It assesses six aspects of right-left discrimination, the specific tasks being as follows (Benton and Cohen, 1955):

With the eyes open, pointing to single lateral body parts.
With the eyes open, execution of double crossed and uncrossed commands.
With the eyes closed, pointing to single lateral body parts.
With the eyes closed, execution of double crossed and uncrossed commands.
Pointing to lateral body parts on a schematic, front view representation of a person.
Execution of double crossed and uncrossed commands involving lateral body parts of both the subject and the schematic representation.

Benton, A.L. Right-Left Discrimination and Finger Localization. New York: Paul B. Hoeber, Inc., 1959. Form A: Child is required to perform localizing movements. Tests require some language comprehension but no verbal response. Form V: This form is similar to form A except that verbal responses are required. A discussion of normative data from both tests is provided.

Trankell, A. Impulse-Scale, for children ages 7-10-1/2. Measure of laterality. The Impulse-Scale consists of twenty items of which the following are characteristic: pick up an eraser; catch a ball; cat with scissors; pour water; shot marbles; use a screwdriver; use a hammer; kick a ball; throw a ball; and hop on one foot.
Source: Skandinaviska Test for laget, AB, Oxen Stiersgaten 17, Stockholm 10, Sweden.
Also see Purdue Perceptual Survey, Roach & Kephart.

Verticality.

Davies, E. The Elementary School Child and His Posture Patterns. New York: Appleton-Century-Crofts, Inc., 1958. A description of an informal means for evaluation static posture.

Schurr, E.L. Movement Experiences for Children's Curriculum and Method for Elementary School Physical Education. New York: Appleton-Century-Crofts, 1967. Criteria for evaluation static posture as presented.

Harris, A.J. Harris Tests of Lateral Dominance. Third addition, New York: The Psychological Corporation, 1958. Ratings are provided for hand, eye, and foot preference.

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Directionality.

Roach and Kephart (1966). Purdue Perceptual Motor Survey. This survey has a total of 22 scorable items within the three major areas of laterality, directionality, and skills of perceptual motor matching.

Laterality: awareness within the body of right and left.

Perceptual motor matching: comparison of perceptual information with information already existing in the organism. Reception, contour, form, and spatial content measured.

Directionality: this subtest measures right-left, up-down, and before-behind process of perceptual projection outside the body.

Body Awareness

Harris, D.B. Goodenough-Harris Drawing Test. Harcourt, Brace & World, Inc. New York, 1963.

Kephart, N.C. The Slow Learner in the Classroom, Columbus Ohio: Charles E. Merrill Publishing Co., 1960.

The Identification of Body Parts section of the Perceptual Survey Rating Scale provides a measure of the child's awareness of the body parts, their names, and their precise location.

Also see Body Image under social development measures.

Perceptual Motor Abilities.

Visual Fine Motor

Beery, K.E. and Buktenica, N.A. The Developmental Test of Visual-Motor Integration. The Developmental Test of Visual-Motor Integration (MVI) consists of a series of geometric forms to be copied with pencil and paper. The VMI measures the degree to which visual perception and motor behavior are integrated in young children, a skill essential to beginning wirting activities. The copying of geometric forms is well suited to this purpose because, unlike letter forms, they are equally familiar to children of varying backgrounds.

Although the VMI can be easily administered by a classroom teacher, it is widely used by school psychologists and other testing specialists. The VMI is primarily used with preschool through grade 3 students, although the Administrator's Manual provides normative data for children ages 2 through 15. The format of the VMI is suitable for both group and individual administration. Testing takes approximately 15 to 20 minutes.

Koppitz, E.M. Bender Developmental Scoring System. The Bender Gestalt Test for Young Children. New York: Grune and Stratton, 1964. A perceptual and projective test for children ages 5 through 10. The Bender Developmental Scoring System is an objective measurement of responses children make to the Bender Visual-Motor Gestalt Test. The test is administered in the usual way, but the drawings are examined for the presence or absence of certain characteristics on the basis of thirty mutually exclusive scoring items subsumed under seven categories: distortion of shape, notations, circles for dots, perseveration, integration of parts, angles and curves, and incorrect angles. Examples of the errors and instructions for interpreting the scores, normative data are provided to compare the child's performance to that of others who are similar in chronological age, maturation in the visual-motor perception and grade level.

Lowenfeld, V. Draw-A-Scene Test. Creative and Mental Growth, New York: The Macmillan Company, 1952. For children ages 2-17. LA Framework that can be used to evaluate the spontaneous drawings of children to get measures of group in intellectual, emotional, social, perceptual, physical, and esthetics and creativity.

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Scribbling stage - (2-4)
Preschematic stage - (4-7)
Schematic stage - (7-9)
Gang stage - (9-11)

Also see Developmental Test of Visual Perception - Frostig

Physical Abilities.

Balance

Kephart, N.C. The Obstacle Course subtest provides an estimate of the child's awareness of the position of his body in space.

Kephart, N.C. The Walking Board subtest of the Perceptual Survey Rating Scale provides a measure of balance.

Seashore, H.G. The development of a beam-walking test and its use in measuring development of balance in children. Research Quarterly, 1947, 18, 246-259. This provides a measure of dynamic balance.

Strength

Doll, E.A. Oseretsky Tests. American Guidance Service, Inc., Circle Pines, Minnesota, 55014. This test provides quantitative measurement of each child's motor development. In addition it provides data on posture, coordination, strength, rhythmic abilities, speed and accuracy. Ages 4-16.

Locomotor

Carpenter, A. Measuring general motor capacity and general motor achievement in the first three grades. Research Quarterly, 1942, 13, 444-465. Carpenter General Motor Capacity Tests - This test provides an estimate of general motor capacity. Stunts and basic skills are assessed. Carpenter General Motor Achievement Tests - Through broad jump, shotput, and weight lifting activities, this test provides an assessment to general motor achievement for children in the first three grades.

Jenkins, L.M.A. A comparative study of motor achievement of children of five, six and seven years of age. Bureau of Publications, Teachers College, Columbia University Contributions to Education, 1930, 414, 16-17. Average scores on motor performances such as borad jump, hopping and throwing are provided for 5-7 year olds of both sexes.

Measuring Cognitive Development

Traditional measures of intellectual functioning such as IQ tests, are not based on developmental conceptions, nor on a specific theory of intelligence. They are simply a combination of tasks which empirically have been shown to correlate with school achievement. The measures suggested here are related to Piaget's developmental concepts.

Concept Assessment Kit: Conservation (Goldschmid and Bentler, 1968.) This test measures two dimensional space, number substance, continuous quality, weight, and discontinuous quantity of 5 to 7 year old children.

Discrimination, Seriation and Numeration Test. (Elkind 1964). This test measures number conception specifically of children 4 to 6 years of age.

Dodwell Number Concept Test. (Dodwell, 1960). This test asks children 5 to 8 years of age to make judgments about quantities of numbers.

MacLatchy Test of the Pre-School Child's Familiarity with Measurement

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(Spayde, 1953). This measure assesses the familiarity of the 3-5 year old with measurement. More specifically the areas of time, liquid, measure, weight, long measure, groups of like things (dozens and pairs), and money.

Observational Measures

There are two observational measures that are used in the Child Development Center one assessing the adult-child interaction process and the other the child-environment process.

Measurement of the adult-child process. The following observation rating scale is used to measure the adult-child interaction process. The rater or raters view a videotape of learning facilitator-child interactions marking the frequency of events as they occured. The rater then replays the tape marking the number of times the strategies could have occured if the teacher either misuses a form or omits a usage. The form of interaction, mode of interaction, and conceptual content and media motivation when it occurs are recorded for each verbal interactive incident between teacher and child.

From this measure one can determine the teaching style - developmental, directive or combination of the two of the adult as well as the degree to which the learning facilitator implements a verbal environment related to the developmental outcome.

Rating Scale for Process

Teacher_____

Developmental Outcome_____

Learner Characteristics of Child_____

Situational Variables_____

Incident	Strategy Used	Strategy Should Have Used	Mode of Interaction	Content of Interaction	Media Motivation
1.					

Coding for Form of Developmental Process.

CODE

Sa R: Encoding Strategies

DQ Direct Question

HQ Hypothesis stating question

AQ Attention seeking question

DS Direct statement

HS Hypothesis statement

AS Attention seeking statement

IS Imperative statement

R Ss: Feedback Strategies

VR Verbal reinforcement

Px Extension of phrases

El Elaboration

Ep Extension of thought

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Coding for Mode of Information Exchange

MR — Memory recall - to ask for recall of information which was received at an earlier time. Ex: "Where have you used these before?"

I — Informs - to tell a fact.

Cl — Classifies - label, describe.

How did it get started?	Analogous relation
Where does it come from?	Synonymous relation
Who made it?	What is it like?
What is it like?	How can you use it?
What is the color (form, texture, etc.)?	Does it help?
What does it look (feel, taste, etc.) like?	How does it help? How could it be used?
What does it consist of? What parts does it have?	How it develops What it becomes How will it change? What is it when it is changed?

D — Demonstrates - to illustrate by example, specimen, or experiment.

Ex — Explains - to make clear or plain.

S — Specifies - differentiates (which block is longer?) What is not happening in the picture? The child is expected to identify similarities or differences to compare on some other basis or to carry out a specified operation which he has been previously taught.

C — Corrects - to make right, rectify, amend.

EF — Expresses feeling

F — Fantasizes in thematic play - Why do you suppose that is so?

Coding for Content of Interaction

Code	
	Cognitive Development
C-S	Seriation
C-Tr	Temporal Relations
C-C	Classification
C-SR	Spatial Relationships
	Motor Development
M-PA	Perceptual Abilities
M-PMA	Perceptual-Motor Abilities
M-LS	Locomotor Skills
M-PA	Physical Abilities
	Social Development
S-SH	Self-help Skills
S-I	Individuation
S-A	Positive social adjustment

Code for Media Motivation

Code	
F	Film
FS	Filmstrip
O	Object

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TV	TV show
G	Game
S	Song
FP	Fingerplay
R	Rhyme
RE	Record
B	Book

Measurement of the child-environment evaluation. This device is a means of observing child initiated activities to determine the child's developmental behavior in a child-centered environment. In the past it has been difficult for developmentalists to measure the effectiveness of the child centered curriculum due to lack of reliable and valid measures. By identifying the variables related to play and identifying the developmental sequence of symbolic thinking and socialization it becomes possible to observe these behaviors in the child centered environment.

According to Hunt (196), it is the child's choice of peers and materials in a self-selective environment that demonstrates his solution to the question of "the match."

This instrument can be utilized by educators of young children to assess the cognitive and interpersonal interaction of each child. It attempts to measure those variables that appear to be realted to play and social and cognitive development of the young child.

In order to assess the children's use of his environment and interpersonal and cognitive (psychosocial) stage functioning of children, the following categories are used:

1. Social development process of child/group
2. Cognitive development process of child/group
3. Content of play (area of development)
4. Focus of group
5. Group leader
   The member whom the majority of the group used as a model or referred to for direction.
6. Group members by sex and age
7. Group location
   In various interest area children could stand (easel, water table, art table) or sit (tea party table-T- or floor-F- for manipulative activities such as puzzles).
8. Learner characteristics--sex, age, socioeconomic status
9. Situational variables - time
   All variables are not measured at the same time sampling. The staff selects those which they are currently interested in finding. These categories are described more specifically below for purposes of coding on the observation sheet.

1. Social Development Process
   unoccupied behavior. Child watches other children, is passive, but does not interact or verbalize with self or others.
   onlooker behavior. Child spends most of his time watching; he often talks to the children he is watching; asks questions, or gives suggestions, but does not engage in the play himself. He stands or sits within speaking distance of the group so he can see and hear everything that takes place.
   solitary behavior. Child who plays with toys different from those of the children within speaking distance of himself; and centers his interest on his own play. Sometimes has imaginary companion 4-10 years of age.

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parallel play. The activity the child chooses which brings him close to other children. May play with similar toys to the children around him but uses the toy as he sees fit and does not try to influence or modify the activity of children around him. Plays beside rather than with children.

associative play. Group play in which there is an overt recognition by the group members of their common activity, interacts and personal associations. Child plays with other children in similar, if not identical activity with no division of labor nor organization around any material, goal, or product. Associative play is characterized by:

1. obvious egocentrism
2. frequently changing roles
3. evidence of self assignment of roles
4. central themes with no rules

cooperative play. This play has the following characteristics:

1. divisions of labors
2. group censorship
3. group leadership
4. subordination of individual desire to that of the group
5. attainment of final goal

2. Cognitive Developmental Process

Imitation - the copying the acts of another

Exploration - the exploring of concrete objects - analyzing how things work, how they came to be the way they are and what they can do (Sutton-Smith, 1971).

Testing - the child tests his world to see if his behavior will have the effects he thinks it will have.

Construction - the child attempts to understand his world by putting things together in his own way.

3. Content of Play

Concrete materials, objects, or more specifically toys, provide basic props or content for symbolic play. Toy play begins in the first years of life and reaches a peak between 7 and 8 years. During the "toy age", child's play is determined by type of toys he has to play with. How the child plays with his toys, how long he plays with them, and how much enjoyment he derives from toy play will depend partially upon his intellectual development, partly upon the toy, and partially upon the conditions under which he plays - whether alone, with an adult, or with another child. The child only retains interest in toys as long as he can endow them with life qualities.

Bridges (1927) in an investigation of the occupational interests of 3 year old children, observed 10 children during the free play hour for several days, recording the time each child took out a set of materials and the time when he put it back to change to something else. She found marked uniformities in the toy preferences, both for the group as a whole and for each of the sexes.

Various kinds of play occur in a more or less predictable order in the child's pattern of development. Block building, for example, passes through four distinct stages. First the child handles, and carries and piles in irregular masses. In the final stage he reproduces real structures.

Materials should promote orientation to the world, responsibility, and cooperation, and a wide range of interests. Classifications of play

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materials should match the symbolic levels of the children and their particular interests. Miniature reproductions of the objects of utility in adult life are necessary for beginning levels of symbolic play. As the child develops, materials are used by him to create objects used in play or in the home. Objects can become many different props and can be categorized into the major areas of development in this curriculum (see coding form).

4. Focus of the Group

Previous writings (Bessard & Bell, 1960; Bessel, 1956) suggest that with each succeeding year, the young child spends less time with adults and derives less pleasure from them. His interest in playmates of his own are constantly growing stronger. While the two year old passively relies on adults for attention and assistance, the three year old resists adult influence and wants to be independent. He becomes self-assertive and difficult to handle. The four or five year olds gradually become more friendly and cooperative, seeking the approval and trying to avoid the disapproval of adults. Focus of the group was determined by the observer evaluating the focus of the attention of the majority of the group on materials, peers, or adults.

5. Group leader.

There is considerable discussion today about "training for leadership." Certain individuals apparently attain the ability to lead others from their own experience without specific training. In any group of children we are likely to discover a leader. At age five, we find some who lead because of their domineering attitude; they are perhaps stronger than the others and threaten their playmates into acceptance of their leadership. Others lead because they have at their command benefits and privileges which their companions lack; they are able to "treat" the others to candy or to movies, or have a home which offers marvelous opportunities in the way of toys and a playroom. These leaders are successful only temporarily; their followers drop away whenever something more interesting appears. The most successful leader is the one who is resourceful, who thinks up more fascinating things to do than the other children, who can always vary play to include a new child.

An example of leadership development would be Michael. Michael, decked out in a purple cape and a golden crown, had just proclaimed himself as king when Peter, a much larger boy, rushed in and said, "You're not the king. I was the king yesterday and I'm going to be the king today." Unflustered, Michael said, "I know! We'll have two kings. I'll be the first king and you can be the second king" ..."No,'' said Peter, "I'll be the first king and you can be the second king" ..."OK", said Michael. "You be the first kind and we'll pretend that you are old and sick and have to stay in bed. "OK?" "OK," said Peter.

With Peter, bedecked in a red cape and a golden crown, confined to his bed, Michael's throne seemed unshaken. Thus the true leader incorporated the intruder into his play with no serious modifications of his own plans. Although the leader generally is somewhat more intelligent than his playmates, if the difference in mental ability is too great, he may fail to reach a common ground of interest with the others (Headley, 1966).

6. Group membership by sex and age.

Membership consists of all those children who comprise the group under observation or who are in proximity of a child under observation.

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7. Group location.

The Child Development Center provides various types of physical spaces where children can group themselves. Space is a most crucial aspect of the play environment. Of interest to the learning facilitator is the question of which areas of the room do children tend to group in. (See coding form for suggested sapces.)

8. Learner Characteristics.

As mentioned previously, learner characteristics are those variables in the learner that affect how he deals with certain strategies, content and developmental outcomes. The characteristics discussed here are those that are known to relate to the child's play. Given the same environment and the same toys, boys and girls display no really significant differences in their play activities until the gang age. Children become aware at an early age that certain types of play are considered appropriate for boys and others for girls.

The sex role for girls today is less clearly defined than the role for boys. Boys play more strenuously; girls prefer games which are quieter and more aesthetic in nature. In block play, for example, boys construct more masculine objects than girls. In early childhood, boys show a greater range of play interests than girls (Iwanga, 1963). There seem to be sex differences in time spent in interpersonal structure with girls likely to spend more time in the given type of interpersonal structure which was the maximum level for that age. The boys engaged mostly in independent structure until they reached 5 years when they became intensely engaged in the integrative structure.

In a study of activity level in various preschool play situations Halverson and Waldrop (1973) found that middle class, white 2-1/2 year old children demonstrated sex differences in their play. Male children's outdoor activity data correlated highly with an active, vigorous indoor free play situation, while female play activity outdoors seemed relatively independent of play indoors. It was concluded that girls' play appeared to be more responsive to situational determinants than boy's play. These observations also supported the previous findings of Zazzo and Jullien (1954); Cromwell, Baumeister, and Hawkins (1963); and Pederson and Bell (1970) that boys are reliably more active outdoors than girls.

It has been hypothesized by Maccoby (1971) and supported by Halverson's and Waldrop's findings that boys' activity levels are affected by playing groups whereas girls' are not. There was no significant differences between girls and boys in activity level while they were playing alone.

a. Sex and Age Differences:

(19) found that as the children advance in age, there is an increase in friendly approaches to other children and a decrease in hostile interactions (see Figure 8-2). Among boys, for example, those 2-1/2 to 3-1/2 years of age made on association and one friendly approach interaction with children every 2 minutes; those 5-1/2 to 6-1/2 years of age made two associations and two friendly approach interactions every 2 minutes. Girls, 2-1/2 to 3-1/2 years of are more shy.

b. Socioeconomic status. Children from different socioeconomic levels have different game needs, as do urban, suburban, and rural children. Young children from poor environments play less than children from better environments. They have fewer toys, less time, and less space to

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play. Rural children play few organized games. They have less equipment for play and usually less free time.

The play activities of children different social class backgrounds are different both quantitatively and qualitatively. Children of the higher socioeconomic groups increasingly prefer play activities that cost money, such as tennis, swimming, or watching athletic contests, while children of the lower socioeconomic classes engage in play activities involving little expenditure of money, such as jacks, ball games, or tag. The social class to which the child belongs influences the kind of books he reads, the movies he sees, the type or organized recreational clubs he belongs to.

Many play activities of children are imitations of adult activities. In every culture, one generation passes down to the next the forms of play which it finds most satisfactory. Values certainly have an important part.

Many deprived or disturbed children have difficulty in games. They often demonstrate impatience with rules and take defeat as a personal affront which is often due to a lack of experience with a consistent supportive adult.

Children who live in poor or deprived homes and neighborhoods often face survival problems which result in a lack of psychological freedom or opportunity to play. Often these children grow up fast, care for their siblings, and in general assume adult roles before they are developmentally ready to do so.

c. Intelligence. Bright babies are more active and playful than babies of average intelligence and their play shows greater ingenuity. The bright child repidly advances from sensory to imitative and imaginative play.

Children with normal or above normal intelligence show a marked preference for play materials that lead to constructive activity. Children of normal intelligence show a greater stability in duration of their interest in each play material chosen. During the preschool years, children with high IQ's show an interest in equipment for dramatic play and creative activities, such as clay, scissors, and paint. They make more complicated designs with blocks, paints, and crayons, show greater originality, and derive greater satisfaction from their play than less bright children. Bright children also seem to derive more enjoyment from being read to.

d. Conceptual tempo. Repucci (1968) in a study of conceptual tempo found that children who seemed to have a fast tempo had less sustained involvement in play and were more mobile, more distractable, and more dependent on the mother in new situations. Another study by Welch (1973) on reflective and impulsive 4 year olds showed that reflective and impulsive 4 year olds do differ in the pacing of their behavior. The reflectives spent more of their time involved in activities and had a shorter duration of transition segments than do impulsive children. The impulsive children were more mobile and were more likely to be dependent on teachers.

e. Health. The teacher must always consider the health of the children - the underweight, the physically handicapped, and the very strong may be in the same class. Healthy children play more than sickly ones. The healthier the child, the more surplus energy he has. Children who lack energy prefer sedentary play. This preference is most apparent during the physical growth spurt of the closing years of childhood. As a

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result, the favorite play of the pubescent child is daydreaming.

9. Situational Variables.

The most researched situational variables related to play is time. While time spent in play decreases with age, time spent in specific activities increases with age. A 2 year old spends six to nine minutes in play activity while a 5 year old spends 12.6 minutes in play activity. Highly organized games and sports take over. They decrease because children have less time for play, a greater understanding of their interests and abilities, and a longer attention span, lack of playmates (lack of acceptance by peer groups).

a. Persistence time. For well developed sociodramatic play, Smilansky (196), includes persistence for at least 10 minutes as an essential characteristic. From the observational research on symbolic play (Lunzer, 1959; Markey, 1935) in which clear age trends were found for the duration of play episodes, it is predicted that the length of time a unit of symbolic play is sustained increases with age.

b. Amount of leisure time. The child with limited playtime engages in activities that can be completed in the time available. The amount of leisure time the child has for play depends primarily upon the economic status of the family. Among children living in a residential suburban community, it was found that those of the higher economic level had few home duties and little or no work outside the home, while children from the poorer homes had less time for leisure activities and more duties.

Code Form for Child-Environment Evaluation

Code	
	Social Developmental Play Level
UB	Unoccupied behavior
OB	Onlooker behavior
SB	Solitary behavior
PP	Parallel play
AP	Associative play
CP	Cooperative play
	Cognitive Developmental Play Level
I	Imitation
Ex	Exploration
T	Testing
C	Construction
	Content of Play
PA	Perceptual abilities
PhyA	Physical Abilities
PMS	Perceptual motor abilities
I	Individuation
SH	Self Help Skills
BA	Behavioral Adjustment to society
S	Seriation
TR	Temporal relations
SR	Spatial relations
C	Classification
AP	Auditory perception
P	Phonology
Sem	Semantics
Syn	Syntax
RR	Reading readiness
DW	Developmental Writing

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	Focus of the Group
A	Adult
P	Peers
M	Materials
	Group Location
F	Floor
T	Table
AT	Art table*******
WT	Water table *****standing locations
E	Easel *******

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Child-Environment Evaluation Rating Scale

Incident	Group Members (Each child in room represents a number) 1 2 3 4 5 6 7 8 9 10	Cognitive Level	Social Level	Content	Focus of Group	Group Leader	Sex and Age	Group Location	Learner Charac.	Situation-al Variables
1.										
2.										
3.										
4.										
5.										
6.										

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Learner Characteristics

Individual characteristics of the learners play a very important role in the types of responses that children make. The adult's degree of sensitivity to these differences will be related to his/her ability to individualize expectations and experiences for each child. Learner characteristics include the level of development of the child; socio and economic level of the child; by the child. The interest of the child at any given moment and response modes preferred by the child.

The learner characteristics that are important to the area of visual perception are listed here. If there is a medical or psychological term for a specific characteristic it is given in the first column, the learner characteristic in the second column, the characteristic's area of development in the third column, and if the characteristic requires an environment other than that described under strategies, content, and situational variables - a special environment is suggested in the fourth column.

Learner characteristics for each area of development can be found in each module. They are too extensive to include here.

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Learner Characteristics for Perceptual Abilities

Terminology	Characteristics	Areas of Development Affected by LC	Conditions for A typical Characteristics
Alternating strabimus	This is similar to children who have to turn the trunk away from the table in order to being one hand to the front. He may not be able to see an object by the time the hand is brought forward and may appear to grope undecidedly or may even pick up the wrong object. His eyes may have turned inward or outward by the time he reaches for what he has just seen so he has to depend on his touch and his remembered estimate of the position of the material or make an attempt to focus one of his eyes anew, in order to respond by a correct grasping and pointing. A constant or even an intermittent strabimus of one eye may cause a child to use only the other eye habitually in order to avoid blurred vision or double vision or other discomfort. A resourceful child may be able to adapt himself to this one-eyed sighting by remembering to look around, and by using appropriate scanning motions (Dunn, 19).	Visual acuity directionality	
Amblyopia	A dimness of vision due to disuse of the weak eye from improper muscle balance.	Visual acuity	

Learner Characteristics for Perceptual Abilities

Terminology	Characteristics	Areas of Development Affected by LC	Conditions for A typical Characteristics
astigmatism (ah-stig-mah-tism)	Refractive error resulting from an irregularity of the cornea or lens of the eye. A defective formation of those curved surfaces of the eye which reflect light rays and as a result, light rays are not focused sharply on the retina, but are more or less diffused, thus giving a hazy image.	Visual acuity Visual attending	
blepharitis (blef-ah-ri'tis)	Inflammation of the eyelids.	Visual acuity Visual attending	
Blind	Legal blindness is an acuity of 20/200 or less in the better eye after maximum corrected or who have a visual field which is less than an angle of 20 degrees or less in the widest diameter.	By visual acuity	Cannot be educated through visual methods.
	Quantity of sensory input is restricted due to inaccessibility parts of the environment or lack of opportunity to explore that which is.	Visual Discrimination Classifies by fewer attributes without sight.	Must teach the child mobility skills so he seeks out information that would come through visual perception to the child with normal visual acuity.
	Has difficulty separating body boundaries from the environment.	Body awareness	Need to develop awareness of body parts, their interrelatedness and their connected

Learner Characteristics for Perceptual Abilities

Terminology	Characteristics	Areas of Development Affected by LC	Conditions for A typical Characteristics
Blind (cont'd.)			separation from environment by active auto-tactual exploration of the body and the experience of being handled with the attendant extrinsic kinesthetic and tactual sensitions. Need to preview difference of "me and not me" (Witkia, Dye, Faterson, Goodenough and Kark, 1962).
cataract (Kat'ah-rakt)	Is an opacity (cloudiness) in the lens of the eye. There are two types of cataracts--(a) senile cataract which is most common and appears frequently in older people; (b) congenital cataract which is found in almost every group of partially-sighted children.	Visual acuity	
Cerebral Palsy (five basic categories listed below)	Types of neuromuscular disabilities which are characterized by disturbances of motor functioning resulting		A child with CP must learn to relax those muscles that become tense & prevent motion.

Learner Characteristics for Perceptual Abilities

Terminology	Characteristics	Areas of Development Affected by LC	Conditions for A typical Characteristics
Cerebral Palsy cont'd.	from damage to the brain and central nervous system. Characterized by muscle weakness or flaccidity. Excessive involuntary motion, postural imbalance, spascity.		Child must learn to synchronize muscle groups for smoothness of movement.
1. Spacity	Involuntary contraction of affected muscles when they are suddenly stretched-called stretch reflex-resulting in tenseness and difficult, inaccurate voluntary motion (Morgenstern, 1964).	Visual attending Directionality Body awareness	Child must learn to bring uncontrolled movement under voluntary control. Braces.
2. Athetosis	Involuntary contraction of successive muscles resulting in marked incoordination and almost constant motion of the extremities. (Morgenstern, 1964).	Directionality Body awareness	
3. Ataxia	Uncoordinated movement, impaired balance, and sense of orientation in space (Morgenstern, 1964).		
4. Rigidity	Child can experience discomfort or dizziness when called upon to look at material closely for any length of time.	Visual attending	Child needs to learn he must look into the distance at occassionally to alleviate dizziness.

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Learner Characteristics for Perceptual Abilities

Terminology	Characteristics	Areas of Development Affected by LC	Conditions for A typical Characteristics
5. Tremor	Rhythmic, involuntary, uncontrollable motions limited to certain muscle groups (Morgenstern, 1964).	Visual attending Body awareness	
conjunctiva (kon-junk-ti'vah)	The delicate membrane that lines the eyelids and covers the eyeball in front and eyelids in back.		
conjuctivitis (kon-junk-te-vi'tus)	Inflammation of the conjunctiva*.	Visual acuity Visual attending	
diplopia (dip-lo'pe-ah)	The seeing of single objects as double or two: double vision.	Visual acuity	
hemiplegia	Cerebral palsy involvement on one side of body (Dunn, 196).	Laterality Body Awareness	
hyperopia (hi-per-o-pe-ah)	Farsightedness; the lack refracting power sufficient to focus the light rays reflected from objects close to the eyes. In hyperopia, the eye is too short from front to back.	Visual acuity	
myopia (mi-o'pe-ah)	Nearsightedness, or short sightedness; defective eyesight due to too great a refractive power (power to deflect light) of the eye, so that the light rays	Visual acuity	

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Learner Characteristics for Perceptual Abilities

Terminology	Characteristics	Areas of Development Affected by LC	Conditions for A typical Characteristics
myopia (cont'd.)	coming from an object beyond a certain distance are focused in front of the retina. Eyeball is too long.		
monoplegia	Cerebral palsy involvement in only one limb (Dunn, 19).	Laterality Body awareness	
nystagmus (nis-tag'mus)	An involuntary rapid movement of the eyeball, which may be either lateral, vertical, rotary or mixed. This may occur as a secondary characteristic of a variety of visual disorders or brain injury.	Visual acuity Visual attending	
optic atrophy	Degeneration of the optic nerve which connects the retina to the brain is manifested by a shrinking or wasting.	Visual acuity	
partial vision	The ability to see less than a normal person as determined by the results of standard test of one's vision; 20/70 to 20/200 range of partial vision. Those with peripheral constancy visual angle vision (tunnel vision) of less than 20 degrees are also considered partially sighted (Bateman, 1967; Jones, 1962.)	Visual acuity	Can read - don't need Braille but alternate in educational procedure such as enlarged print.

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Learner Characteristics for Perceptual Abilities

Terminology	Characteristics	Areas of Development Affected by LC	Conditions for A typical Characteristics
paraplegia	Cerebral involvement of lower part of body (Dunn, 196).	Body awareness Verticality	
ptosis (to'sis)	Drooping of the upper eyelid.	Visual acuity	
quadriplegia	Paralysis of incoordination of all four extremities (Dunn, 196).	Laterality Verticality Directionality	
strabismus (strah-biz'mus)	Crossed eyes or squint - faulty muscle coordination.	Visual acuity Visual attending	
trachoma (trak-ko-mah)	An infectious disease of the eyes, which is believed to be caused by a virus. It causes a chronic inflammation of the eye. More commonly called pink eye. The eyelid droops and affects the conjunctiva and corenea (the enter parts of the eye.)	Visual acuity Visual attending	
	Cannot form complete judgements of distance.	Distance and perception and movement.	
	Cannot form complete judgements of spatial relations.	Body Awareness Perceptual Constancy Directionality	
	Can "see" four sides of a square; but cannot recognize them as an entire unit.	Part-whole discrimination	
	Unable to relegate ground and borderline incidentals to their proper position.	Perceptual Constancy Figure Ground	

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SITUATIONAL VARIABLES

The situation in which the child finds himself affects the learning that occurs. Situational variables in the child's larger environment would include parental neglect or excessive pressure, family instability and deterioration, parent uninterested in education, inadequate home language models, inadequately educated parents, lack of cultural opportunities, excessive migrant behavior, poverty and slum conditions, and lack of educational materials in the home.

The physical context and group structure in a classroom are important conditions in the child's uses of a variety of mental operations. The teacher who is sensitive to these influences at work can become involved in attempts to manage them to the advantage of achieving the desired objective. Situational variables related to the educational environment include adult-child ratio, peacement of materials, equipment available, freedom of movement, time schedule, teacher-child rejection, failure and experiences in truacy and segregation.

Specific examples of considerations of situational variables in the area of language development are given below.

1. What political system of the society of the child - authoritiarian/democratic).
2. What nationality or culture - English/Australian/Irish/other; Steward compared two cultures that differ radically in their tolerance of the peculiarities of child language. He found stuttering more common in the society that made more rigid demands on the young speaker.
3. What social organization - family/community; Speech patterns of "significant people" as modes as well as the amount of speech interactions tolerated by significant adults and the quality of those interactions are important situational variables. The child's ability to correct his own articulation errors tends to depend on availability of a good speech model who has a meaningful relationship to a child, usually a parent. Research investigators have found that children are retarded in language development where there is an absence of a living mother figure or where rearing is in impersonal institutionalized settings. Research also indicates bilingual children as a group generally develop names for a smaller number of concepts than nonolinguists.
4. What social class. Research consistently shows that children from higher socioeconomic circumstances generally have a larger vocabulary, have greater facility, and develop language facility faster than do children of lower socioeconomic status (especially those termed "disadvantaged". There are, however, individual variations in rate of learning and competence.

   Irwin's (1948) work pinpoints the early age at which environmental differences impinge on phonological development. Comparing the number of sound types and tokens produced by infants from birth to 30 months he found infants from higher status families had significantly higher scores for the last year of the period than did those from lower-status families. In other words, the developmental curves separated at 18 months of age.
5. What siblings - none/twins/many; The number and relative age of siblings effects the onset of speech and rate of mastery. Only children have been found superior to children with siblings, while twins often develop special systems of communication reducing the need to acquire the language of adults, while singletons-with-siblings resemble twins more than only children (Anastasi & Foley. 1949). Research indicates that sibling position may be an environmental factor with difference related to social environment and degree of stimulation children ex-

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perience in the family context.

Children of multiple births are known to be retarded in language development (McCarthy, 1945), implying the importance of siblings in the kind of language the child learns. Hockett (19), has suggested that older children are the most important environmental force in shaping the younger child's speech habits.

These and other situational variables are taken into account when the learning facilitator is deciding what intervention to make in order to assist the learner in language acquisition.

STRATEGIES

Many instructional strategies are thought to be related to the patterns of thought expression observed in children's responses, e.g. the adult's way for formulating questions, the adult's ability to build an emotional climate of security and trust that frees children to make responses in the learning environment, and the adult's pattern of responding to a child's constricutions which can influence the child's future contributions. When selecting strategies for facilitating the outcome, the learning facilitator should consider the most effective media or environment for the child to demonstrate the desired behavior and which learning activities are appropriate for the child to develop the developmental outcome or objective.

The three basic intervention strategies used in the Child Development Center are labeled "developmental" and "directive". The developmental process is normally used unless the skill task or learner requires a more directive process. Behavior modification is used in modifying undesirable social behaviors and learning skills such as attending. This strategy is most often used with the children demonstrating developmental delays.

Regardless of the process strategy used there are some identified learning situations which occur in the curriculum that have specific steps.

There procedures if followed along with either developmental, directive or behavior modification process should go smoothly and be an effective experience for the children. Situational procedures are suggested for cooking, reading a book to children, block play, typing, singing, clay play, finger painting, pasting, gluing, tempera painting, puzzles, language master, dress up and language experience approach.

Developmental Process

There seem to be two basic elements of the developmental teacher strategy that carry content in a learning situation. These consist of an environmental stimulus and reinforcement which are dependent on the response of the learner and can be provided by the learning facilitator or a peer.

In the developmental process there are two combinations that are most commonly used. These consist of (a) and antecedent behavior of the learning facilitator or environment (Sa), followed by a learner response (R), (Sa- R); or (b) a learner response (R) followed by a form of feedback or a subsequent stimulus by the environment or learner facilitator (Ss), thus creating a pattern (R- Ss). Occasionally a learning facilitator may use a more directive interaction pattern of Sa- R- Ss) intermittently with the (Sa- R) or R- Ss) nature. In the Sa- R) pattern the learning facilitator is conscious of creating an environment, be it physical or verbal, that will elicit a response from the learner. These stimuli have been labeled encoding strategies meaning those techniques that

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will get the child to verbalize. The developmental process consists of encoding techniques - those stimuli given by the adult that elicit verbalization from the child through using questioning and statement giving strategies and corrective feedback techniques (responses to child's utterance) which include verbal reinforcement, extension, elaboration, and extension of thought.

Encoding. Encoding is the child's ability to put ideas into words. The learning facilitator must determine what it is that motivates a child to talk. The technique used in inducing the child to speak varies from child to child and may not be exactly reproducible by other adults.

As stated previously encoding is the person's ability to put ideas into words. Language development of the child who is beginning to use language symbols is contingent on encoding. John and Goldstein (1964) argued that the process of generalization and discrimination involved in learning the meanings of more abstract words does not come about simply through "reception exposure" to many examples, but through "active participation with more verbally mature individuals". The benefits of a variety of non-verbal experiences may depend on the availability of help in encoding that experience into words. The stimuli to encourage a child to encode will vary from child to child. One must determine what it is that motivates a child to talk.

The two tools the learning facilitator uses then in encoding are the question and the statement.

Questioning strategies appear in three basic forms for the early childhood level. These include direct question, hypothesis stating questions, and attention seeking questions.

1. Direct questions - These are typically wh questions that call for facts, labels, or one word responses. These questions ask for a single correct response from a field of alternatives.
   - who - Who did it?
   - when - When are you going?
   - what - What shapes are your name tags?
   - where - Where is your toy?
   - which - Which picture is better?
2. Hypothesis stating questions - (yes and no questions).
   - do - Do you see this?
   - would - Would you put this toy away?
3. Attention seeking questions - open questions. These require the child to use sentences and to think more divergently in that the question stimulus asks for multiple responses.
   - How (does, could, will)
   - Tell me about
   - What can you tell about
   - What does _____ make you think of?
   - What things make you think of _____?
   - What is _____?
   - In what ways does _____?
   - What is not happening?
   - What kind of pictures do you think I have?
   - What other ways can you do it?

The following strategies are suggested by Darrow (1966) to encourage verbalization of conceptual thinking:

Verbal spontaneity and free response:

Question conditions to elicit;

What can you tell us about . . .?

What can you draw or write about . . .?

What can you do to show us about . . .?

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Following are examples of questions eliciting free responses about two:

Tell all you know about two.
What is two?
What does two make you think of?
How can you show two?
Do you know any words that mean two?
What things make you think of two?

There are four types of statements that can be used to elicit a response when encoding.

1. Direct statements:
   "Jerry has found an interesting bug."
2. Hypotheses statement (contains element of doubt):
   "I'm not certain it will turn out."
3. Attention seeking statement:
   "Look at the wheels go round."
4. Requests in form of a statement (imperative):
   "Come here and turn the hendle."

Feedback Techniques. In order to facilitate the learning of sounds, names of experiences, and differentiation between the names for familiar objects the child needs verbal feedback from his environment.

The first and most simple type of feedback given a child is verbal reinforcement. It can be found in the following forms:

Verbal Reinforcement Words:	Sentences:
good	Good for you to know that is Jerry's toy.
yes	Yes, it is a black dog.
that's right	That's right, it is round.
I agree	I agree, it does look dirty.
(surprise)	I didn't know you knew that!
(repeat child's word)	Child: "Dog" Adult: "Dog"

Verbal reinforcement confirms to the child that his verbalization was accurate and valid.

The second technique is labeled extension. This technique provides corrective feedback and experiences for the child when he talks with the adult. That is, the adult said more completely what the child had tried to say, but keeps it close to the child's own words. Children between 12 and 24 months usually produce one word utterances most of which are nouns in adult grammar. Verbs and adjectives appear also (McNeill, 1966). It is these words that the adult extends.

The following table from Brown and Bellugi (1964) shows how the adult repeats and adds to the child's words and word parts. These additions make the child's speech more complete and more specifically appropriate to the situation.

Child says	Learning Facilitator
Baby highchair	Baby is in the highchair.
Throw Daddy	Throw it to Daddy.
Eve lunch.	Eve is having her lunch.

Such typical extensions constitute examples of feedback. In fact, extensions constitute the one category of adult responses in which the nature of the assistance to the child can be specified. Brown and Bellugi (1964) suggest that extensions provide this assistance, particularly for the acquisition of grammar:

> By adding something to the words the child has just produced one confirms his response insofar as it is appropriate. In addition one takes him somewhat beyond that response but not greatly beyond it. One encodes additional meanings at a moment when he is most likely to be attending to the cues that can teach that meaning (p. 143).

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Following are examples of the learning facilitator extending the child's words while interacting in the classroom. This learning facilitator provides the new label of rolling pin for the child to learn.

Learning Facilitator	-What is this? (rolling pin)
Child I	-A cookie roller. A tortilla roller.
Learning Facilitator	-What is its name?
Child II	-You roll dough with it.
Child III	-It's long Johns.
Child IV	-A roller.
Learning Facilitator	-It is a roller, but is has a special name.
Learning Facilitator	-David, what does your mother call it?
Child I	-I don't know, but she uses it.
Learning Facilitator	-It has a special name. It's called a rolling pin.
Child II	-Rolling pin.

II.

Child I	-Black and white.
Child II	-Speckled and spotted.
Learning Facilitator	-Yes, these seeds are speckled and spotted with black and white.
Child I	-They have points.
Child II	-They got little seeds to eat inside. Open seeds.
Child III	-Yes, it's pointed, too.
Learning Facilitator	-Yes, the outer shell is pointed and the inner seed is pointed too. What else is pointed?

Elaboration is the third form of feedback in developmental process. Cazden (1965), in a study with two year olds, found in acquisition of grammar that meaningful variety and frequency of conversational engagement is critical as opposed to corrective exposure to limited forms. She concluded that "what young children should have is plenty of opportunity to talk things over outloud with conversation focused on the development of ideas. Given this opportunity, the acquisition of grammar will be assisted too."

This technique is further supported by Razran (1961) in a Soviet experiment . Nineteen month old children were taught the concept of book by three different methods. One group received a single book and a single sentence. The varied language group received a single book and twenty different sentences about the cook. The varied referent group received twenty different books and one sentence. Learning as measured by the child's ability to select a book from a group of objects was greatest for the varied language group, next best for the varied referent group, and practically nonexistent for the first group.

Slobin (1967), in his studies of children's acquisition of syntax, found that expansions were among the most important teaching devides used by adults.

An elaboration technique consists of the learning facilitator giving the child a new word not a part of the child's vocabulary when extending his sentence or when describing something to him (Cazden, 1965; Razran, 1961). The facilitator in responding to the child, uses one of several classes of words for elaboration which are given below. Elaboration consists of adding a descriptive word to the child's words or describing an object to him. The following areas of concepts can be used in elaboration:

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Sight (size, shape, color, condition, composition, major parts, and function)
Touch (shape, texture, temperature, and weight)
Taste (texture - sweet and sour, cooked and uncooked)
Smell (pleasant, unpleasant)
Hear (what sound does it make?)
Emotion and Feelings
Positional concepts (position of an object)
Opposites and contrasting conditions
Quantification Experiences
Comparison experiences (big-bigger-biggest)
Time experiences (words that express time concepts)
Motion experiences (describe how things move)
Association experiences. Indirect associational experiences are those things that are pertinent to the major concept.

The final form of feedback is extension of thought. The learning facilitator provides an expansion of the idea with various syntactical models that are more dense with transformations, thereby demonstrating more intellectual discrimination and more organization of thought, and offering more precise semantics. For example:

The children are watching the water boil in order to cook something.
Mike: "I see hot."
Jose: "I see smoke."
Teacher: "That smoke which you think you see is called steam. Steam rises from hot water."

Content of Interaction

J. McVicker Hunt (1964) discussed the concept of the match between the incoming information and that already stored within the listener (the child). He pointed to the discrepancy that often exists between the level of complexity in the language of parents and teachers and the level of complexity of a child can handle comfortably and effectively. He suggested the adult incorporate two skills when attempting to determine the appropriate language match for the child. First, the adult should, through listening and observation, ascertain what information the child has already stored and understand and what skills he already commmand; and secondly, it must be the adult, the developed organism, who consciously matches his style of communication with that of the child, the less developed one.

The areas of motor, cognitive, social, and language development are categorical in nature so that the content of verbal interaction can be classified. Each major area of development contains subcategories. There are all defined in the goals of the developmental curriculum.

Mode of Interaction

The mode of interaction refers to the type of cognitive process that is being used in the interaction process. On the developmental process scale only the mode used by the adult is recorded. Some teacher observation scales and teaching models promise to open up possibilities for adding new dimensions to intellectual activity in the classroom. A fair amount of this work seems to have been inspired by Guilford's research on the structure of intellect (1956). For example, Gallagher and Aschner (1965) have developed an elaborate system for analyzing teacher-pupil interaction in the classroom with special focus on several factors in the Guilford model: cognitive memory and convergent, evaluative, and divergent thinking. Such an observation scale makes it possible to monitor the extent to which the intellectual processes are emphasized in the classroom and to note their effects on educational accomplishment. A more

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recent publication by Meeker (1969) further elaborates the applicability of the Guilford model to the classroom and suggests specific curricular designs to nurture certain cognitive operations. These include memory, evaluation, convergent production, and divergent production of fugural symbolic, semantic, and behavorial material. A more focused attempt at actualizing Guilford's divergent production operation was Suchman's (1960) inquiry training program, a kind of teacher-guided learning by discovery. There are, of course, ways other than Guildord's to classify intellective processes in the classroom. Smith (1960), for example, has studied teacher behavior extensively and identified twelve logical operations involved in it. They include defining, describing, designating, stating, reporting, comparing and contrasting, substituting, classifying, opinioning, evaluating, conditional inferring, and explaining. Presumably these operations are modeled by teachers with the expectation that pupils will learn to perform them.

Hunkins (1972) identified the cognitive process categories of memory, comprehension, application, analysis, synthesis, and evaluation in his teacher-pupil question inventory. Toar (1972) found in applying the Florida Taxonomy of Cognitive Behavior to Head Start follow through children that lower levels of cognitive processes such as memory recall and working with similarities and differences correlated positively with pupil growth in abstract thinking, whereas the higher levels of application analysis, synthesis, and evaluation correlated negatively for the most part (Brandt, 1973). This would be expected when using a instrument which is designed to measure adult problem solving processes with children operating preoperational cognitive stage.

Media Motivation for Interaction

Media in the early childhood environment could include organic objects, artifacts, children's literature, movies, films, filmstrips, slides, tapes, lighting, music, found objects, art reproductions, sculpture toys, art media for creating purposes, songs, rhymes, records, and any other environmental object that would motivate the child to verbalize (Mann, 1973).

It is often media in the environment that arouses the child's curiosity to ask a ""wh" question, to make an exclamation statement or comment or in the case of verbal media - imitate. Many children will learn a song, rhyme, or story from listening to a record. Media is the core of a child centered environment, and it is to the responses that the child makes in relationship to that media the adult provides corrective feedback. The media then is the motivation which provides the child responses in an (R- Sa) cycle of the developmental process. When it is evident that media is related to the child's response the specific type of media will be coded on the scale.

The mode of interaction infers that the stimulator or responder is always transmitting information in some way. The mode becomes the way the information or content is transmitted. Mode in the developmental process consists of the following categories: label, memory, inform, classifies, demonstrates, expalins, specifies, corrects, expresses feeling, and fantasizes.

Directive Process

In the directive process, teaching or interaction consists of a series of environmental events: (1) the learning facilitator presents a stimulus (antecedent event) to the child such as "Say dog"; (2) the child then makes a response "dog"; (3) the facilitator then gives a type of reinforcement (subsequent event) such as "Good boy! This is a dog." This S-R-S+ cycle is referred to as the directive process. In the directive

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process it is the adult who determines what is to be learned. She accomplishes her objective by effectively arranging the occurence of the initial stimulus events for the child. This is done by controlling where and how one talks, praises, shows things and prompts or reinforces the child's responses (Becker, Engelmann, and Thomas, 1971). Perhaps the most well known example of the use of the directive process with young children is the Becker and Englemann Distar program.

Following are examples illustrating the differences on the type of interaction that occurs with the directive and developmental processes.

The first facilitator is using the developmental process of Sa- R while the other is using the questioning as part of Sa- R- Ss or more directive teaching strategy:

Facilitator and Children:

C1 They wouldn't be traveling anymore. They would just stay to get water.
F1 Why do you say this?
C1 Because they usually travel to get water.
C2 There would be more grass for their sheep.
F1 And what would this mean?
C2 They wouldn't need to move around to get food.
C3 Well, they would probably have more food and the rain would make things grow. They could plant flowers, plants, and trees for wood.
F1 And this means -
C3 they could use the wood for houses and stuff.
Etc.

Facilitator and Children:

C6 They'd be using one house and stay in one place.
F2 All right. They'd stay in one place and they might make their houses with mud.
C8 They wouldn't have to move so much.
F2 Why?
C8 Because they'd have enough grass.
F2 Right, to find their animals.
C3 They'd make crops grow.
F2 What kind of crops do you think they'd grow?
C3 Things that need sun and not too much water.
F2 What kind of things would that be?
C3 Barley.
F2 They could grow barley and not have to go to the bazaar to buy it.

Behavior Modification

The basic paradigm for behavior modification is R-S+ (child response --adult reinforcement). This differs from the (R-S+) in the developmental process in that the adult reinforces only those responses that are related to a behavior or understanding the adult wants to alter rather than providing additional feedback information to the child's response. Also the feedback is always a reinforcement either verbal, nonverbal, or a tangible object and not types of feedback such as extension, elaboration and expansion that are used in the developmental (S+).

Typical uses of behavior modification in the Child Development Center are creating independent learners, changing a deviant behavior and increasing visual and auditory attending.

Redirecting behavior. Another strategy to change the child's behavior is induction. Induction is used in the Child Development Center to redirect behavior when behavior modification is not applicable. Induction

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involves the process of giving the child a social reason for altering a behavior. An example of induction would be: I'd like for you to stop throwing the toy because it will break and someone may get hurt. An "I feel" message is often conveyed when induction is used.

When a child is exhibiting inappropriate behavior, the learning facilitators in the CDC, along with using induction, may give the child two alternatives to redirect his/her behavior such as: you may keep the water inside the water table or you may choose another activity.

Situational Strategies

As previously mentioned although the directive, developmental, and behavioral strategies are the two basic processes by which children learn in the Child Development Center, there are some specific situations which employ one or the other or a combination of the two where the learning facilitator tends to use a certain strategy. The following specific situations arise within the curriculum and the learning facilitator needs to have a strategy by which to foster them so the child will be successful when engaging in them. These situations include cooking, storytelling, reading a book, block play, typing, teaching a song, clay play, finger-painting, pasting, gluing, tempera painting, puzzles, language master, dress up and language experience approach to reading.

Cooking.

1. Make certain all hands have been washed before participation. Stress cleanliness (i.e. aprons, clean hands, and use of clean towels.)
2. Involve a large group only if the recipe is simple and quick. If the recipe is more complicated requiring a longer time period, limit participation to two or three children at a time. Be sure that each child has an opportunity to participate.
3. Display pictoriae recipes on large sheets of poster board or chart paper. These charts should illustrate the steps to be taken in sequence.
4. Be sure that each child is involved in the planning (what to make, who will do what, who will clean up, etc.)
5. Emphasize safety:
   a. Only the teacher may turn on and off appliances or set temperatures.
   b. Pan handles should be turned away from the stove or table edge.
   c. Demonstrate proper and safe procedures for chopping, slicing, peeling, etc. Begin by letting children work with soft foods.
   d. Children may stir hot food only if the teacher is nearby and watching. Pot holders (mittens) should always be used.
6. If you do not have access to a kitchen, make use of popcorn poppers, electric frying pans, mini ovens, blenders, waffle irons, hot plates, and other appliances.
7. Have children bring in the food called for in the recipes.

The following are examples of pictoral cooking charts used in the Child Development Center. The background is large colored oak tag, and product labels are used whenever possible. Cooking is an option for the children, allowing any who wish to participate to do so. The cooking strategy mentioned in this guide is implemented during cooking activities.

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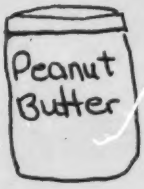
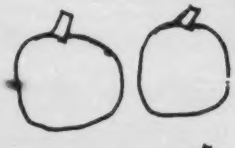
PEANUT BUTTER

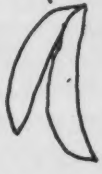
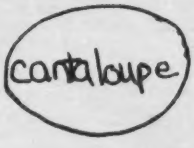
2 + 5

in a

= 

FRUIT SALAD

Chop 2  + 1 +

2  + + 1 

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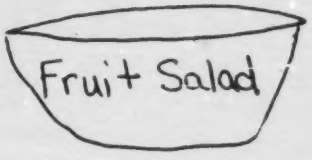
= 

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Storytelling.

1. Choose a story about which you are enthusiastic. The children will pick up your feelings.
2. Practice the story until you are familiar with it and feel comfortable in telling it (practice in front of a mirror may be helpful.)
3. Have the children sit close to you so you can evaluate their reactions.
4. Be dynamic and dramatic.
5. Begin by setting the mood. Describe the time, place, and characters. Keep the introduction brief.
6. Develop the plot in a logical fashion, step by step, in order to develop interest.
7. Make sure the story is short and keep the language simple.
8. Do not elaborate on "side issues", but stick to a single theme.
9. Make sure the story has an ending which will satisfy the children. A conclusion that is too long in coming will cause the children to lose interest. A story that is ended too abruptly is frustrating.

Reading a Book.

1. Read a book only upon the request of individual children. Don't force the whole group to listen to a story. Read to individuals or small groups who are interested. This will help them enjoy the discovery that listening to a story is fun.
2. Read aloud books that you are enthused about and really enjoy. Read for the pleasure of it!
3. Read with expression.
4. Never read a book just to keep the children quiet and still. Books should serve a more worthy purpose.
5. Ask the children to guess what the story is about from clues in the cover or the title of the book.
6. Select books that deal with a variety of subjects but emphasize books that deal with family, pets, or any objects or events which are familiar to the young child's environment. Stick to books that have large and colorful illustrations. No reading session should last more than ten minutes.

Block.

1. The block corner must be away from the main traffic of the classroom.
2. A rug in this area will reduce noise level.
3. Silhouettes of block shapes painted on storage shelves enable children to sort and match blocks when putting them away.
4. Large blocks can be stored in moveable bins.
5. The children should not be allowed to build structures taller than themselves.
6. A large corner or area must be provided for block building.

Typing.

Typing (independent activity)

1. Demonstrate insertion of typing paper.
2. The first 2 or 3 interactions with the typewriter should allow for free exploration by the child.
3. Secondly, allow child to type his name and draw his picture underneath. If child cannot write his name, write it on paper and tape paper next to typewriter for the child to copy.
4. Write a color word such as red on paper to be taped next to typewriter. Provide a color word chart to enable the child to check the word with the appropriate color. Encourage the child to drag

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a picture using the color typed. Use the same procedure with all color words.

5. Ask children to tell you their favorite food; write it so they may type it and draw a picture.
6. More advanced children may type short sentences and rhymes:
   a. Look at me.
   b. This is red.
   c. A frog on a log.
   d. A cat with a hat.
   e. A duck in a truck.
   f. I like to play this.
   g. Type the alphabet.

   All of the above should be written on paper and taped to the table for the child to copy. He may then draw a picture below.
7. Ask the child to tell you what he would like to type and then write it for him to copy.
8. Encourage children not to be distressed with typing mistakes. They should continue on same paper.
9. When typewriting experiences are inappropriate, place a cover over the machine.

Song.

1. The teacher must "sing out", be lively and enjoy the song.
2. Make sure the song is simple.
3. Never spend more than ten minutes teaching one song.
4. Sing an old song to warm up.
5. Begin by teaching the words
   a. say the words in the rhythm of the music.
   b. say the words with the children.
   c. go over one line or one phrase at a time.
6. Listen to the melody (use record or instrumental accompainiment).
7. Teach the melody in the same manner as you taught the lyrics.
8. Review the song later in the day or the next day.

Clay.

1. Keep clay in containers with lids. Near where clay is kept, keep pieces of oil cloth.
2. Allow children to interact with clay freely, reminding them to always use oil cloth and put clay back in container with lid on when finished.
3. After children have interacted freely, encourage children to roll, press, pull, stretch and pound and poke the clay.

Fingerpainting.

1. Children wear smocks (they button each other).
2. Teacher wets paper with a sponge.
3. Allow children to choose a color of paint. Place a tablespoon of paint on the child's paper.
4. The first few encounters with fingerpaint should provide for free interaction with the paint.
5. After children have explored the media encourage use of fingertips, fist, fingermails and back of hand.
6. Allow children at this point to choose two colors of paint.

Pasting.

1. Demonstrate how to open container and remove paste with spoon.
2. Allow children to get their own paste (one teaspoon) on a small square of paper towel.
3. Demonstrate application of paste: Use only pointer finger to apply paste on center of paper to be pasted. With pointer finger spread paste from center to edges. Place paper on background and

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smooth it by pressing from center to edges.
4. Keep a wet sponge on the table to wipe pointer finger on.

Gluing.

1. Pour glue in small margarine containers so glue not used may be saved with lid.
2. Instruct children to apply glue with cuetip or tonge depressor on material to be glued. Spread from center to edge and place on background. Emphasize smoothing from center to edge.
3. Children need to be reminded that in order for objects to stick they must be pressed firmly.
4. When gluing glitter, saw dust, etc. glue is applied to background, then raw material sprinkled on and shake remaining particles off.

Tempera Painting

1. Prepare the following environment-two sided easel placed on old plastic table cloth, oil cloth, shower curtain, or linoleum; basket or smocks (old shirts with sleeves cut off) nearby; 2 pencils tied to easel and a squirt bottle of water of freshened paints when they dry out overnight. Cover easel with news paper Baby food jars may be used to keep paint in.
2. Instruct children to button each other's smocks. And to always put name on paper. (If child is unable to write his/her name, have him/her write his first initial or some symbol).
3. Talk about wiping excess paint on side of jar before painting; putting brush back in proper jar; ask friend to unbutton smock when finished and place back in basket; and wash hands when finished.
4. The first experiences should be with only 2 colors and then work up to 4 or 5 colors.
5. Completed paintings may be hung on portable clothes line.
6. Paintings may be displayed with clothespins on a colored fishnet.

Puzzles.

1. Puzzles should be rotated so that the children's interest is maintained.
2. The children must be allowed to explore and experiment in their own way.
3. If a child cannot complete a puzzle he must ask for help from a teacher or another child.
4. Puzzles must be completed and put away before the child can engage in another activity.
5. Puzzles should be stored in puzzle racks which are easily accessible to the children.
6. Verbalization between teacher and child is highly appropriate to help the children learn the names of the objects.
7. Puzzles may be worked blindfolded.
8. Pieces from several puzzles may be mixed together and then sorted.
9. Puzzles may be worked without the frame.
10. Puzzles that have missing pieces should be discarded.

Language Master.

1. Complete instructions are included with the machine. It is simple to operate and "child proof". Blank cards may be ordered and prepared cards are also available.
   a. begin by showing the children how to push the card through the machine to listen to the teachers voice prerecorded on the strip of tape on the bottom of the card.
   b. after the children have learned how to manipulate the card show them how to record and listen to their own voice.

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2. Take photographs of each child. Staple or clip the picture on language master cards. Write the name of each child on the card in heavy black marker. Yes manuscript printing.
3. Pictures relating to a major concept can be glued on the cards and labeled such as body parts, fruits and vegetable, etc.
4. Make word cards for children engaged in writing language experience stories.

Dress Up.

1. All the clothes should not be available at the same time. Clothes should be rotated to keep interest high.
2. The clothes should encourage a wide variety of possibilities for role playing.
3. A full length mirror should be provided.
4. Clothes should be kept clean and pressed.

Language Experience.

1. Day 1 (Group Story)
   a. present stimulus (such as live animal) to the children.
   b. record the comments of the children on chart paper with a dark crayon or marker. Limit the story to 2 or 3 comments. Explain that everyone will eventually get a turn. (Linda said, "I like the white rabbit)."
   c. read the story to the children.
   d. the teacher and children read the story together.
   e. Have the children illustrate the story. Write comments dictated by each child on their picture.
2. Day 2 (Work with individuals)
   a. the teacher rereads the story to the child.
   b. the child reads the story but the teacher should be ready to supply any unknown words immediately.
   c. circle the words the child knows.
3. Day 3 (Individual Work)
   a. the teacher reads the story.
   b. the child reads the story.
   c. Isolate the words to determine if the child can identify them.
   d. Write the known words on cards and give them to the child to keep in a word bank.

For detailed information regarding the Language Experience Approach:

Stauffer, P.G. Directing Reading Maturity As a Cognitive Process. Harper and Row: New York, 1969.

Content

Content refers to the physical media and objects that the child interacts with as well as the verbal interactions with adults and peers.

The child usually determines the content (that which he wishes to explore) in a child centered environment. If a child never or seldom selects content activities that would be beneficial to his/her development the teaching facilitator intervenes and attempts to redirect his choice through motivation and/or behavior modifications.

Content is always changing in the child development center in order to maintain high interest level. When the teacher observes little use of media he/she replaces it.

Multi-sensory concept centers. Traditionally teachers have relied upon the "unit approach" to derive content for their curriculums. A unit approach is fact oriented and demands rote memorization from the learner. Rote memorization does not require the learner to implement creativity or problem solving techniques. Herein lies the major difference between the "unit approach" and the multi-sensory concept center.

A multi sensory concept center begins with the concrete and allows the child to deal with the abstract through generalizations and associations he makes through multi sensory experiences with concrete and semi-concrete objects in the concept center. A "unit approach' is limited in that it is only applicable for the few children in the classroom that developmentally can deal with the abstract before the concrete. A multi sensory concept center can be appropriate for learners of all ages.and can allow each child to deal with the concept at his own rate of development.

The first step toward the implementation of a multi sensory concept center is to locate an active area within the classroom. After choosing a concept formation area, gather concrete materials (games, toys, puzzles, pictures, books and food) that relate to the chosen concept. Display the materials esthetically in order to invite children to interact with them. The teacher serves as a learning facilitator, interacting with the learner through the use of appropriate questioning strategies as well as pre-and posttests. The following is a multi sensory concept center on "boxes".

Multi sensory Concept Center - Boxes

Categorization

a. function - to contain, to store
b. color - all colors
c. composition - metal, wood, glass, plastic, paper
d. number - four sides
e. major parts - lid, bottom, sides
f. five senses
   1. taste - food products packaged in boxes
   2. smell - materials packaged in boxes that have distinctive aromas, i.e., soap, spices
   3. touch - products packaged in boxes that have a distinguishable texture, i.e., spaghetti, cotton, sugar
   4. sight - box labels, sized and shapes; i.e., hat box, band aid box, oatmeal cereal boxes
   5. hearing - determine content of boxes by shaking
g. size - small, medium and large; i.e., ring box, shoe box, refrigerator
h. shape - round, square, rectangle, oval
i. associations - food, storage, packing, presents

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Areas of Development

a. Motor
   1. Visual - spatial - nesting boxes
   2. Gross - jumping over and inside a box
   3. Visual fine - wrapping a present
   4. Visual perceptive - matching lids to boxes and placing appropriately
b. Language
   1. Phonology - "B" sound
   2. Semantics - box, lid, side, inside, container, corner, top, bottom Relate each to the type of concept it is.
   3. Syntax - describe contents of box
   4. Auditory discrimination - sound boxes
   5. Reading - labels on packages
   6. Writing - design labels
c. Cognitive
   1. Classification (grouping) - make relational discriminations (food from the food boxes; shoes from shoes box); make functional discriminations (how we use products from boxes); develop descriptive discriminations (determine various attributes of different boxes); develop conceptual discrimination (most abstract, e.g., boxes, furniture, etc.)
   2. Seriation (ordering) - ordering of size (big/little); relationship of quantity (more/less); relationship of quality (composition of box - wood, plastic).
   3. Spatial relations - position in space (in box/out of box); direction in space (to box/from box); distance in space (near the box/far from the box).
   4. Temporal relations - in terms of periods (boxes uded at breakfast, lunch and dinner).
d. Social
   1. Self-concept - role play - "shoe store"
   2. Self-help skills - cooking (pouring and measuring from boxes)
   3. Social adjustment - sharing content of boxes

Sample Lesson Plan

Name of Activity: "Concentration"
A. Learner outcomes (developmental)
   a. To develop visual memory
   b. To develop visual perceptual skills that are essential to reading
B. Learner outcomes (directive)
   a. The child will identify two cards that match.
C. Conditions:
   a. Learner characteristics: appropriate for children 2 years-adult
   b. Situational variables: small group (up to 4) or individual activity
D. Strategy:
   a. Directive approach: Show children two cards that are the same. Say, "these look alike because they are the same. They match." Show the children two cards that are not the same. Say, "These cards do not look alike because they are different. They do not match." Then explain, "As we take turns you may turn over two cards. If your find a match you can hold the cards until the end of the game. Try to remember what your friends turn over so you can make matches."
   b. Developmental approach: Display cards in a colorful box on the concept center table. Allow the child to manipulate the cards so he may discover that each card has a match.

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E. Content: Product labels taken from boxes displayed in concept center are glued on 3x5 cards. An exact duplicate must be made for each card. The cards should be laminated or clear contact paper can be applied in order to protect the cards.
F. Resource: Early Learning Center - Stamford, Connecticut.

Daily Functioning

Research indicates that children function at optimum levels when an environment is consistent and predictable. The Child Development Center operates under this assumption, allowing for flexibility within the prepared environment.

The environment at the Child Development Center has been prepared so that even the youngest child can choose his own activity and return materials to the shelves independently. Since we are striving to create independent learners, it is necessary to prepare an environment that does not demand constant teacher intervention. As mentioned in our description of the physical environment, all materials are stored in colorful plastic dishpans, straw containers, etc. All materials available for the children's use are selected according to appropriateness for multiage grouping. The child has the freedom to make choices, but is free only to choose within the carefully prepared environment.

A day at the Child Development Center begins as a graduate student meets each child at his car and then accompanies him to the classroom where the head teacher greets each child. As the children enter the classroom they hand up their coats and then engage in an activity of their choice.

As the children interact with each other and the environment, the teachers record all observable and relevant activities and behaviors of each child. The teachers use 3"x5" index cards to make such notes; the cards are dated and the teachers wear big aprons with large pockets to hold the cards. At the end of each session the teachers meet to discuss recorded date on the cards, and from this data determine one task for each child to complete with a teacher for the next day. The task is appropriate to the child's developmental level and interest. Every two weeks, work study students type all recorded data on each child for the Head Teacher to examine and use in assessment of the child's learner characteristics and his/her developmental levels. This information is also useful during teacher/parent conferences. This recording system was adapted from a similar recording system used at the Early Learning Center at Stamford, Connecticut. It should be noted that teacher intervention to perform the assigned task is limited to those times when the child is not engaged in meaningful activities. An "involved" child is never interrupted. It is our feeling that constructive interactions between children should never be interrupted. When it is felt by the staff that an activity should be changed, constructive developmental feedback is given to the child.

Process art activities, wood working, water play, manipulative games and toys, housekeeping equipment, a listening center, concept centers, and books to be read on the top level of the loft are always available.

"Snack time" is one of the few group times at the Child Development Center. Once each week, the children prepare the snack in a cooking activity.

If weather permits the children are taken out into the university grounds, either for a walk or for some type of gross motor activity. Playground equipment is being designed by architectural students and will be completed during the 1974 fall session.

The children then return to the classroom to pick up their belongings. The Head Teacher then takes them to their cars where parents are waiting.

After the children have gone daily staff meetings are held to complete records on the children and plan next days focus sheet (see re-

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cord keeping). In addition to the records kept on children in the Child Development Center, an observer records interaction between the children and a teacher. The role of observer is rotated so that each staff member and all graduate assistants are both observed and observers. These observations include the observer's perceptions of at least three helpful or useful things seen in the lesson taught and one suggestion or concern. Observations are presented at staff meetings. Because the observer emphasizes the positive aspects of the teaching situation, the staff rather than being "defensive," is able to focus on the suggestions of the observer. This "coaching" system was also adapted from the Early Learning Center.

An Activity Flow Chart follows in order to present an overview of the Child Development Center's daily activities within it's prepared environment. It should be kept in mind that too many initial choices for the child is overwhelming and frustrating and therefore new activities should be phased in gradually. The morning Child Development Center session meets from 8:45 a.m. to 11:15 a.m., and the afternoon Child Development Center session meets from 12:15 p.m. to 2:45 p.m.

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Activity Flow Chart

Free Choice Activities:	Clean-up & Snack:	Outdoor Play:
8:45-10:15 12:45- 1:45	10:15-10:45 1:45- 2:15	10:45-11:15 2:15- 2:45

Library on Loft - 2;
Water table-3;
Listening center (language master sound, filmstrips, and record player) -3;
Concept Center - as desired;
Cooking - as desired;
Easel painting - 2;
Carpentry - 2;
Manipulative (puzzles, small blocks, pegboards, bead stringing) - as desired;
Montessori equipment-as desired;
Large building blocks-as desired;
Trucks/trains - 2;
Large connecting toys-as desired;
Doll House - as desired
Dress-up - as desired;
Kitchen play - as desired;
Beauty parlor - as desired;
Shaving - 2;
Enrichment games with teacher and/or assigned task - as desired;
Singing - as desired.

Cookies/Jiice

Children participate in cooking the following:
popcorn
salad
peanut butter
milkshakes
bread
muffins
pretzels
cookies
pudding
apple sauce
brownies
soup
fudge
jello

See-saw
Wagon
Tricycle
Balls
Jumpropes
Climbing box (Snap Wall)
Rocking Boat
Large plastic blocks
Balance board
Walking Beam

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Parent Program

With the number of educational services for preschool children increasing in the last decade, so too has the awareness of involving parents with the preschool programs. As educators of young children we must strive to develop effective parent programs in order to meet the needs of the total child.

It is essential for there to be consistently between the child's home and school environments communication between parents and the program's staff. Parents participating in parent groups can derive social satisfaction as well as the building of a positive self image. Such groups can contribute to the parents working together to solve concerns dealing with childrearing practices. While communicating with parents, effective listening must be conveyed by the staff.

The parent program implemented at the Child Development Center is twofold. The Head Teacher plans 3 parent meetings, late summer, fall, and spring to acquaint parents with CDC policies, program, and various activities concerning the children involved in the CDC. At this time the CDC is open for the parents to visit. In addition to the parent meetings, two individual parent conferences are scheduled throughout the school year. Daily anecdotal records kept by the staff od each child is available for the parents during their individual conferences (See daily functioning).

The second part of the Child Development Center parent program is in its first year of operation involving parents 1973-74. This Model Parent Education Program is designed for parents of preschool aged children by Dr. Richard Abidin and his staff. The program has been developed in terms of self contained learning modules. The modules have been designed so that the parent education program can and will be taught by the early childhood-special education trainees to the parents of the children enrolled in the Child Development Center.

The model parent educational training program consists of 15-20 modules. Each module is presented to the parents at weekly meetings. The weekly meetings last for approximately 1-3/4 to 2 hours and will involve a 15-25 minute coffee break to stimulate interaction among parents. Each module is designed so that it is a self contained unit which will take approximately 1-1/2 hours to complete. In addition to participating in the training modules, the parents are given a 15-20 minute homework assignment each week. These assignments are aimed at supporting the modules and delivering certain cognitive information. The reading level is kept at the level of a local newspaper.

The following is the introduction to the Parental Skills Trainee Manual. This manual outlines the childrearing parent program offered to parents having children enrolled in the Child Development Center.

PARENTING SKILLS
TRAINEES MANUAL

R.R. Abidin

PREFACE

For many centuries men of different nationalities, races, and religious backgrounds have struggled to obtain a "good life" for themselves and their children. They have developed and applied scientific technology to conquer diseases, to mass produce goods, and to travel in outer space. These scientific achievements have taken place largely due to the recognition of the importance of education and training in develop-

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ing knowledge and skills necessary to achieve these technological goals. Yet, in one area, and possibly the most important human activity, the raising of children, we have failed to recognize and plan for the development of the knowledge and skills necessary to do the job.

It has been frequently observed by professionals and others interested in children that one must be licensed to be a plumber, or a truck driver, and yet no requirements for parenthood exist beyond the biological necessities exist. The licensing of parents is obviously absurd but this does not mean that nothing can be done. The question might be raised as to why little has been done in the past concerning childrearing knowledge and skills. The answers undoubtedly would be many and varied. The notions of mothering instinct, fear of domination by forces external to the family, the wide range of differing cultures and values, are but some of the important factors. Further, the professionals concerned with children have contributed to the problem by each suggesting the "right way". Each of these "right ways" starts from a specific set of assumptions and values and proceeds to describe how children should develop and how they should be managed. The failure to date of these efforts to be useful to the average man is probably based on the failure to separate the technology of childrearing from the assumptions and values. Beyond that, the failure to develop specific knowledge and skills in the parent has limited the usefulness of many ideas.

Therapists have for years recognized that the unhappy, maladjusted, and ineffective human being is generally that individual who sees himself as having limited choices and means of achieving his personal goals. Effective intervention takes place when the individual develops the knowledge and skills to achieve his goals or is helped to clarify or change his goals so that they are achievable. In many ways the position of the parent is such that he has only a limited range of knowledge and skills applicable to childrearing.

Child psychologists and other child workers often report that they have never met a parent who purposely reared a child to be unhappy, maladjusted, and ineffective; yet millions of these children exist today. In the course of clinical interactions with these families, what emerges are parents who are ignorant about their own values and assumptions and about the many different effective means of managing and developing desired and effective behavior in their children. All too often serious problems in personal and social adjustment in children are related to gross knowledge and skill deficiencies in the parents.

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POLICIES OF CHILD DEVELOPMENT CENTER

Students doing student teaching experiences are given preference over observers in research of Child Development Center. Therefore any other participants or observer usually limited to the afternoon sessions. Early childhood students use the Center to implement projects for course-work. Any student in the School of Education may observe or participate. The Center is also available to service students from other departments but all students must comply with our observation and participation approval forms. These forms are submitted to the Head Teacher for scheduling and approval.

The Child Development Center also serves teachers from surrounding school districts and will upon request, provide presentations concerning the Child Development Center. Interested people in the community and state are welcome to observe by making arrangements with the Head Teacher.

An example of the Child Development Center observation and participation forms and a sample lesson plan follow.

Research is also encouraged but must be approved by the Head Teacher and CDC Director. A proposal must be submitted for review before permission is granted. Researchers must comply with the center's research policies.

Child Development Center Observation and Participation Procedures

The Child Development Center is available for observation by students professors, interested people in the community, and out of state visitors. Any one wishing to observe may do so by setting up a date and time with the Head Teacher and must complete the observation form that follows.

A Participation form also follows and is available for Early Childhood students as well as any other student enrolled at the University of Virginia. Students may implement lesson plans, course projects, requirements, or research. Participation must be approved by the Head Teacher.

Observation Approval Form for Child Development Center

As an observer in the Child Development Center you will be expected to adhere to the following policies:

1. You will not interact with the children. If they approach you, tell them you are here to watch them and not talk with them - then ignore them and focus your attention elsewhere.
2. Do not talk to others (other observers, teachers). This is distracting to the children and teachers.
3. Do not smoke, chew gum, eat or drink beverages while observing.
4. You should stay quietly seated during your observation time and not be in and out of the room.
5. You will adhere to the professional ethic of confidentiality regarding the children you observe. You will discuss your observation results with your professor and/or class in regard to what you learned and not discuss specific children using names. The children should not be discussed outside the UVA School of Education.
6. If you have questions or concerns regarding anything you observed in the Child Development Center you will direct them to the teachers (or to Dr. Mann) after the children have left.
7. Observers will be assigned an observation position where they will stay for the duration of their observation period.

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Students' Name_____
Address_____
Phone_____
Course_____
Professor_____
Purpose for Observation_____
Time preference for Observation: Day Time

1._____ _____
2._____ _____
3._____ _____

Observation Approved_____
for - Date_____ Time_____

Participation Approval Form for Child Development Center

As a participant in the Child Development Center you will be expected to adhere to the following policies:

1. You should go over your lesson plan with the CDC teacher at least one day previous to participating with the children. The teacher will select children who are appropriate for your lesson.

Lesson Plan Form

Name of Activity:

A. Learner Outcomes (directive or developmental)

B. Conditions:
   a. Learner characteristics (response modes, developmental levels, socio-economic levels, etc.)
   b. Situational variables (group structure, adult-child ratio, etc.
   c. Strategy (development, directive, behavioral)
   d. Content (the conceptual understandings related to the major concept introduced)
   e. Resources:

2. You should request your materials at least 20 minutes before the children arrive so you won't be taking the teachers away from their responsibilities with the children.

3. Do talk with the other teachers about children or not related topics when the children are in the room. You are there to interact with the children. 3a - You will not smoke, chew gum, eat or drink beverages while participating.

4. You are part of the teaching staff when you are participating, therefore, you are expected to assist with clean-up, taking children to the restroom, and other similar tasks.

5. You should arrive at least 20 minutes before the children come.

6. When interacting with the children keep in mind the following behavior responses:
   a. Ignore deviant behavior unless a child is being physically injured.
   b. Speak to the children in a positive manner - don't show disgust when they spill or display negative behavior. Treat them with respect.
   c. Don't ask the children if they want to do something. Always give them a choice of 2 or more activities when directing their behavior.

7. After the children have gone home you will meet with the CDC teachers to discuss the evaluation of your lesson.

8. You will adhere to professional ethic of confidentiality regarding the children you work with in the Center. You will discuss your interactions and observations of the children with the CDC staff, your professor and/or class in terms of what you learned but not in terms of specific children by name 0 with specific problems. The children should not be discussed outside the School of Education.

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Students Name _____
Address _____
Phone _____
Course _____ Professor _____
Purpose for Participating _____
Time Preference: Day Time
1. _____ _____
(include length 2. _____ _____
of time needed) 3. _____ _____
Participation approved _____ for
Date _____ Time _____.

Research Policies of Child Development Center

It is the position of the Child Development Center to encourage research as it is only by more knowledge of the child's development that society can provide better environments for children.

To conduct a research project in the Child Development Center a proposal must be submitted to the Center Director for review.

The major criteria for acceptance of the proposal is to protect the children from research that will cause discomfort, injury, or invasion of their privacy.

Other variables that must be taken into consideration are:

1. that there are sufficient number of types of children the researcher needs;
2. that there are no other research studies already approved for the same time period that would affect the research being reviewed.

Admission Procedure and Policies

To enroll a child in the Child Development Center a parent must first complete the Child Information Form and Parent Permission Form. When these are returned to the Center the child is placed on the wait list. When an opening occurs the first child on the wait list who fits the criteria of the opening (the appropriate age bracket, sex, normal or delayed in development, socio-economic status, and race) may enroll. This is done to keep the heterogenocy required for a multi-age, multi-ability grouping.

There is a tuition fee of $500 for the nine month session; this is paid in 2 installments. Two children in each session are admitted tuition free for socioeconomic reasons.

CHILD INFORMATION FORM

Name of Child: _____ Date of birth: _____
Parent's Name: _____ Age: _____
Address: _____ Race: _____
_____ Home Phone: _____
Father's Place
of Employment: _____ Work Phone: _____
Mother's Place
of Employment: _____ Work Phone: _____
Name of Neighbor: _____ Phone: _____
Name of Relative: _____ Phone: _____
Preferred Hospital: _____
Child's Physician: _____ Phone: _____
Emergency Room Insurance: _____

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Medical History

List any childhood diseases the child has had: _____

List any foods the child is allergic to: _____

List any special medical knowledge the teacher should know about, like alergies to medicines, etc.: _____

Siblings:	Name	Age

PARENT PERMISSION FORM
FOR
School of Education Child Development Program

Developmental Measures:	The Child Development Program has my permission to give my child developmental measures in the areas of language, motor, cognitive, and in personality development to assist in curriculum planning and evaluation.
Field trips and transportation in general:	The Child Development Program has my permission to take my child on field trips, including walks, rides on public transportation such as bus or train and car transportation to various points of interest and also for emergency medical services.
Films and Press Releases	I give my permission to use photos, films, video tapes and/or recordings of my child for teacher training purposes at the School of Education, University of Virginia. I also give permission for photos for press releases.
Food:	The Child Development Program has my permission to give food to my child as long as it is not detrimental to his/her health.

This permission form becomes effective September 1, 1973.

_____
Parent or Guardian

_____
Date

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